

FOMENKO, Yuriy Yevgen'yevich; FAYNSHTEYN, Vladimir Maksovich;
~~POZIN, Mikhail Solomonovich~~; LANCVSKAYA, M.R., red.izd-va;
~~ISLENT'YEVA, P.G.~~, tekhn. red.

[Operator of guillotine shears] Rezhik gil'otinnykh nozh-
nits. Moskva, Metallurgizdat, 1963. 157 p. (MIRA 16:9)
(Shears (Machine tools))

AGRE, V.L.; AL'DIYEVA, K.N.; ANANYAN, V.V.; BERLIN, R.I. [deceased];
ISTOMIN, A.V.; KAGAN, I.A.; KRONGAUZ, N.D.; KULAKOV, A.M.;
MARKOV, V.P.; MATVEYEV, Yu.M.; NESVETAYEV, A.M.; OSIPOV, A.P.
[deceased]; POZIN, M.S.; FAYNSHTZYN, V.M.; SHAPIRO, B.S.;
SHEVCHENKO, N.A.; SHCHIRIN, V.N.; AL'SHEVSKIY, L.Ye., kand.
tekhn.nauk, red.; VLADIMIROV, Yu.V., red.izd-va; MIKHAYLOVA,
V.V., tekhn.red.

[Rolling and pipe mills] Prokatnoe i trubnoe proizvodstvo.
Pod red. L.E.Al'shevskogo i A.V.Istomina. Moskva, Gos.nauchno-
tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1962.
246 p. (MIRA 15:2)

1. Moscow. TSentral'nyy institut informatsii chernoy metallurgii.
(Rolling mills) (Pipe mills)

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1ST AND 2ND TRIERS

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A study of the stability of substances containing a high percentage of calcium hypochlorite. M. E. Pozin, *J. Chem. Ind. (Moscow)* 1932, No. 11, 2330. Ca(OCl)₂ loses almost no active Cl₂ on heating to 60°, but above this temp. it loses it with increasing rapidity. Moist Ca(OCl)₂ decomposes less quickly than dry. Air contg. H₂O or dry CO₂ has little action, but moist CO₂ decomposes Ca(OCl)₂ very quickly. Light causes some decompn. Ca(OCl)₂ is much more stable than CaOCl. H. M. I.

ASAC 11A METALLURGICAL LITERATURE CLASSIFICATION

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CK

Regeneration of sulfuric acid used in the drying of chlorine. M. E. POZIN. *Trans State Inst. Applied Chem.* (Leningrad) No. 15, 43-44 (1962).-- The tower H_2SO_4 used in drying Cl_2 can be freed from dissolved Cl_2 by heating to 220° , and then concd. to 66° Bé. at 300° , which requires costly special acid and Cl_2 resisting app. By blowing air through the acid the bulk of Cl_2 is practically immediately expelled, while the last fraction of Cl_2 is somewhat difficultly removed. On passing 135 l. air per l. of H_2SO_4 , it retains only negligible traces of Cl_2 , and can be concd. to 66° Bé. without danger of corrosion of the app.

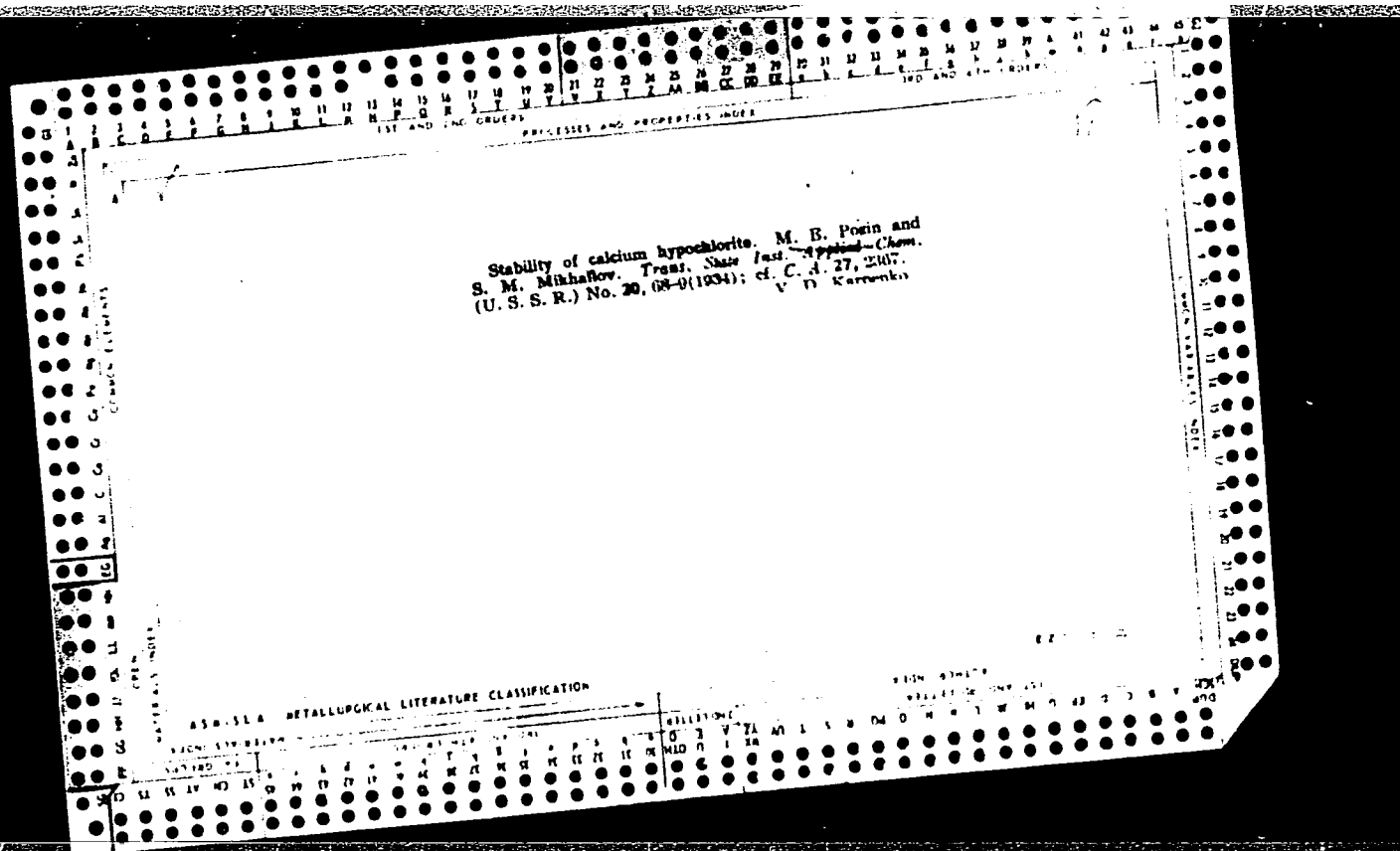
CHAS. BLANC

ASH-51.4 METALLURGICAL LITERATURE CLASSIFICATION

117

Determination of relative velocities of slaking of lime.
M. E. Pozin. *Zarodskaya Lab.* 3, 1041 2(1934); cf.
C-A-29-2312. The velocity of hydration of CaO is
proportional to the time elapsing before the temp. of a
sample attains a max. value under standard conditions.
B. C. A.

Increasing the rate of slaking lime with solutions of electrolytes. M. E. Pozin. *J. Chem. Ind. (Moscow)* 1934, No. 12, 43-5. The rate of slaking CaO is doubled when 5% NaCl solns. are used instead of pure H₂O. Stronger solns. are not desirable. Solns. of CaCl₂, NaNO₃, and Na₂SO₄ act in the same way. Sugar solns. decrease the rate of slaking. H. M. Leicester



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COMMON ELEMENTS

1ST AND 2ND COLUMNS

PROCESSES AND PROPERTIES INDEX

180 AND 1TH COLUMNS

The preparation of high-quality chloride of lime.
M. E. Pozin, *J. Chem. Ind. (Moscow)* 12, 810(1935);
cf. *C.A.* 30, 822^a.—When Ca(OH)_2 is suspended in CCl_4
and chlorinated for 3 hrs. at 0° , the product contains
42-9% active Cl. If an aq. suspension of yellow HgO
is chlorinated, HgCl_2 and HOCl are formed. The soln.
is filtered and neutralized with lime. It gives a product
contg. 45% active Cl. Chlorination of a suspension of
 CaCO_3 in H_2O at 0 to -5° gives CaCl_2 and HOCl . The
latter is extd. with CCl_4 and neutralized with finely
ground lime. The resulting Ca(OCl)_2 contains 51.5%
active Cl.
H. M. Leicester

WATER-ALS INDEX

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

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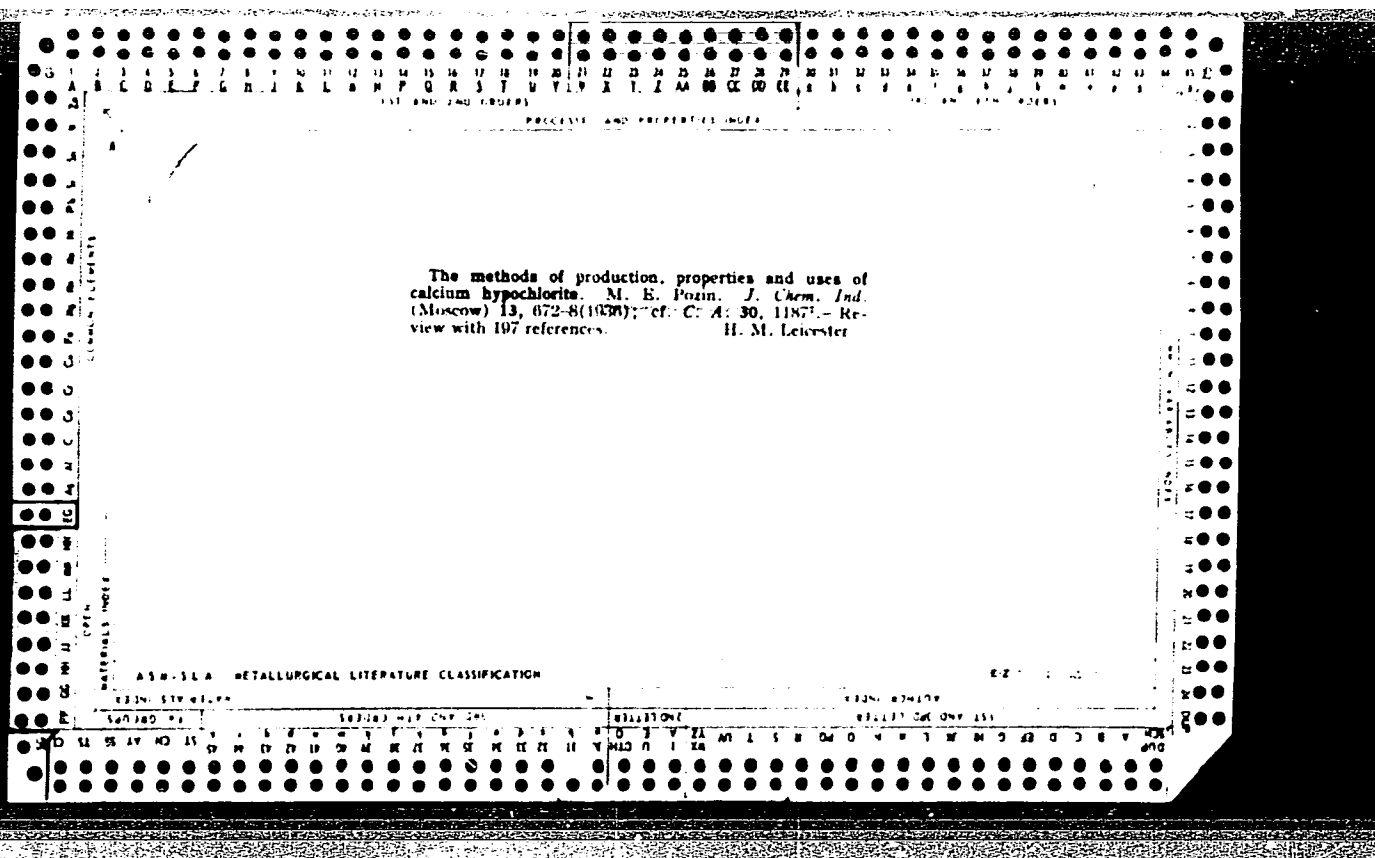
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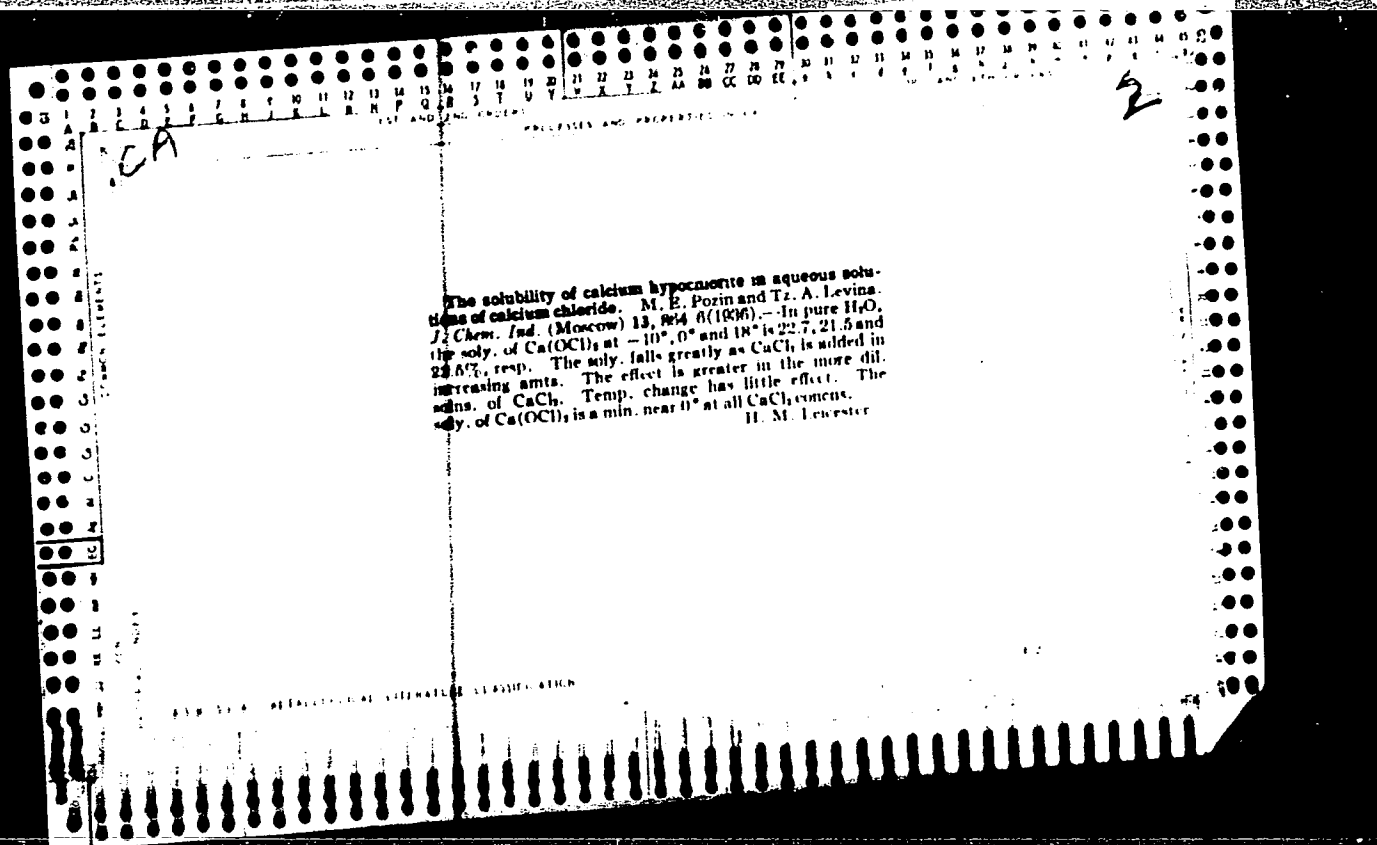
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The quality of the lime used in producing chloride of lime. M. E. Pogin. *J. Chem. Ind. (Moscow)* 12, 920-32 (1945). "The fineness of particle size, rapidity of slaking and reactivity of lime toward Cl_2 are increased when it is prepd. from CaCO_3 by igniting at the lowest possible temp. In practice, this is 1000-1100°. No free CaO should be left in the Ca(OH)_2 , since during chlorination this will be slaked, and will cause local overheating. A moisture content of 0-7% in the lime does not greatly affect chlorination, but the product keeps better if it is drier; hence the lime should contain about 0.5% H_2O before chlorination. The dispersity of the lime particles increases with standing; hence older lime chlorinates better.

H. M. Leicester

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION





1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p>CA Absorption of SO_2 by a Na_2CO_3 solution in a packed column. M.B. Kuzin. <i>Khim. Prom.</i> 1944, No. 6, 14-18.</p> <p>—The coeff. of absorption of SO_2 by 17.5-22.6% Na_2CO_3 solns. in a tower packed with porcelain or glass Raschig rings or porcelain balls was studied on a lab. scale. The gas contained 3-7% of SO_2. The absorbing soln. was recycled through the column. Analyses were made of the incoming and outgoing gas and of the absorbing soln. after each cycle. This gave an insight to the conditions in each corresponding section of an industrial tower. The results are tabulated and presented graphically. The reactions are: $2\text{Na}_2\text{CO}_3 + \text{SO}_2 + \text{H}_2\text{O} \rightarrow 2\text{NaHCO}_3 + \text{Na}_2\text{SO}_3$; $2\text{NaHCO}_3 + \text{SO}_2 \rightarrow \text{Na}_2\text{SO}_3 + \text{H}_2\text{O} + 2\text{CO}_2$; $\text{Na}_2\text{SO}_3 + \text{SO}_2 + \text{H}_2\text{O} \rightarrow 2\text{NaHSO}_3$. The last of these reactions sets in when the first 2 are completed; the 1st and the 2nd commence almost simultaneously, but the 1st is finished before the 2nd. The max. concn. of NaHCO_3 in the reacting soln. reached 9-11%, under the existing conditions. The max. concn. of Na_2SO_3 is 12-14% SO_2. This of NaHCO_3 and Na_2SO_3 in the towers at the time that these salts reach their max. concn., a temp. not below 60° should be maintained in the tower, at least during the 1st half of process. The av. rate of increase in the concn. of bisulfite is approx. 20% or even lower, since as H_2O evaporates SO_2 in the 2nd half is twice as much as the av. rate of increase in the concn. of sulfite SO_2 in the first half. Since approx. 20% of the Na_2CO_3 soln. can be 1 mol. of SO_2 reacts to form 2 mols. of bisulfite, the rates (at 60°) the concn. increases. If the SO_2 supply is lowered, of formation of sulfite and bisulfite in the soln. should be lowered accordingly. The initial Na_2CO_3 concn. should be lowered accordingly. It is maintained the outlined conditions, bisulfite solns. of increase of total SO_2 (sulfite + bisulfite) in the soln. are produced contg. approx. 27% SO_2, as compared with not uniform throughout the process; the total SO_2 concn. were produced contg. approx. 27% SO_2, as compared with increases up to a max. and then declines. To avoid pptn. the usual 22.5% of SO_2.</p> <p style="text-align: right;">M. Hineh</p>																																																			
<p>ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>REACTION ONE</p> <p>REACTION TWO</p>																																																			

18

CA

Rationalizing the production of sodium sulfide. M. E. Pozin? *Kavcheshkaya Prom.* 1944, No. 12, 10-12.—
A review of methods, foreign and domestic, with special emphasis on the fuel used. M. Honeh

COMMON ELEMENTS

OPEN

MATERIALS INDEX

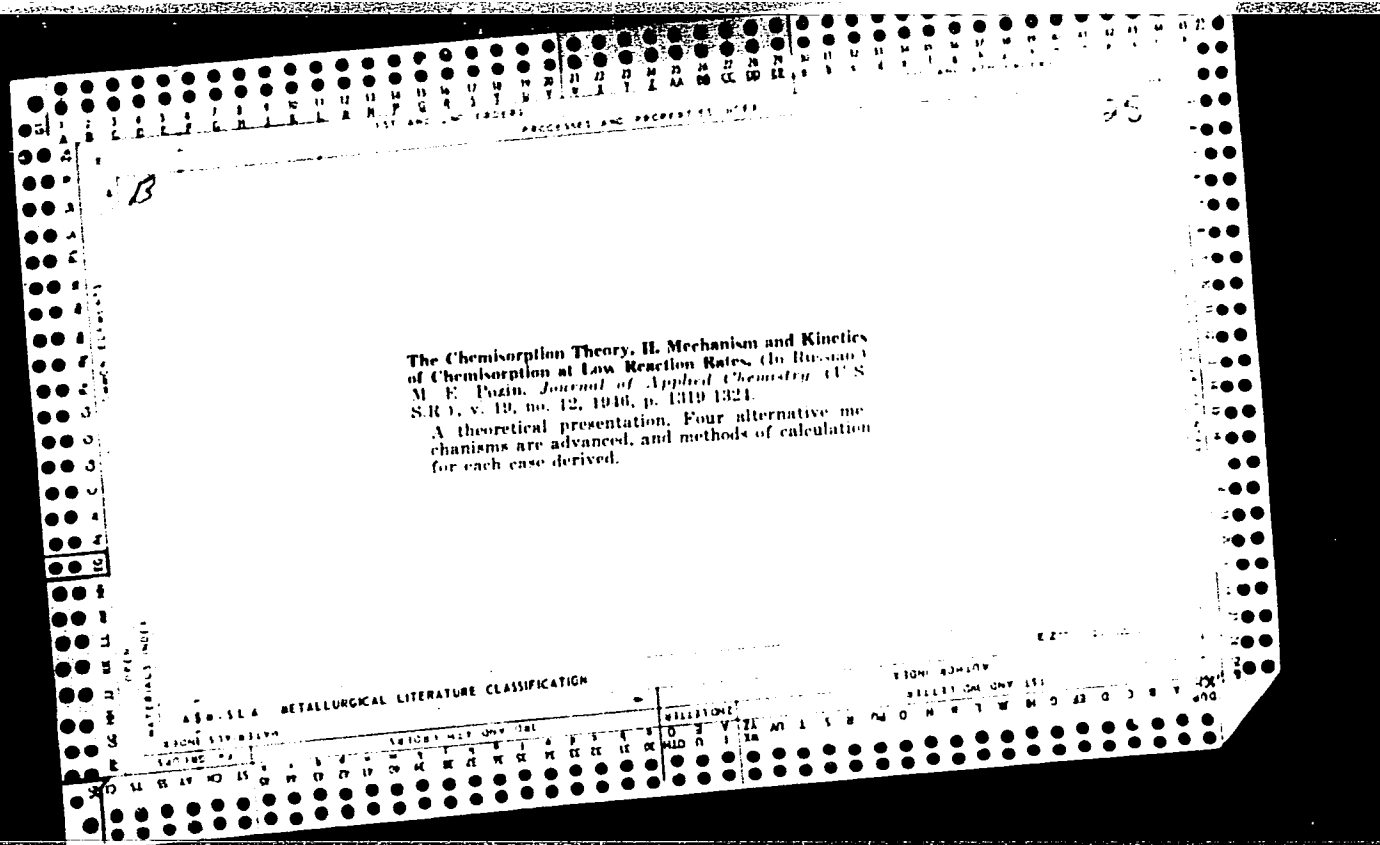
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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COMMON ELEMENTS		PROCESSES AND PROPERTIES INDEX		3RD AND 4TH GROUPS	
<p>CA</p> <p>Theory of chemical absorption. I. The mechanism and kinetics of chemical absorption at high velocities of reaction. M. B. Papis (Leningrad Technol. Inst.). <i>J. Applied Chem. (U.S.S.R.)</i> 19, 1201-12 (1946) (in Russian).—The rate of absorption of a gas by a liquid with which it reacts chemically (e.g., absorption of CO_2 or NO_2 by a soln. of NaOH) is detd. by the rate const. of the chem. reaction K, the diffusion coeff. D_1 of the gaseous substance to be absorbed and the diffusion coeff. D_2 and D_3 in the liquid phase, the former pertaining to the absorbed substance in soln., the latter to the reactive part of the absorbing substance; $D_2 \approx 10^{-1}$ and $D_3 \approx D_2 = 10^{-1}$ sq. cm./sec., $D_2/D_3 = D_2/D_1 = 10^4$, and the velocity of absorption is almost wholly detd. by the 3 magnitudes K, D_1 and D_2. A system is considered consisting of diffusion layers on both sides of the boundary of turbulent liquid and gaseous phases with zero vol. velocities. With $K > D_2 > D_1$, the driving force of the absorption is independent of the concn. of the gas and is detd. solely by the "chem. capacity" c, i.e. by the no. of moles/l. of the gas that can be bound by 1 l. of the given bulk concn. of the absorbent; c falls to zero at the phase boundary. In the expression for the amt. G absorbed per unit area F per unit time τ, $dG/d\tau F = (D_2/\delta) \cdot c = \Delta c$, where δ = thickness of the liquid diffusion layer, Δc is const. If the change of density γ and viscosity η of the absorbent can be disregarded; in that case, integration gives $G = \Delta F \tau (c_1 - c_2) / \ln(c_1/\eta) = \Delta F \tau \bar{c}$ where c_1, η, \bar{c} are the initial, final, and logarithmic mean values, resp.; Δ is then identical with the rate const. of the unimol. reaction. A corrected expression is derived for the case when the absorbent undergoes a significant change of mass. If the changes of γ and of η during the process are significant, $\Delta = \Delta_1 \gamma^{1/2} / \eta^{1/2}$. Rough evaluation shows that the min. gas pressure p down to which the rate of absorption remains independent of p is of the order $p_{\text{min}} \approx 10^{-3}$ c; only at the very lowest p does G depend on it and then $G = \Delta_1 F \bar{p}$ where \bar{p} = mean logarithmic p. With $K > D_1 > D_2$, the rate of diffusion of the absorbent being insufficient to bind all of the gas dissolving in the liquid film, the latter seps. into 2 layers, the dissolved gas diffusing from the boundary to the reaction zone and the absorbent diffusing in the opposite direction from the bulk of the liquid; at the boundary, the pressure of the gas p_0 and the concn. x_0 of the dissolved gas are related by Henry's law $p_0 = Hx_0$; in the reaction zone, both x and $c = 0$. In this case, the rate of absorption does depend on p, namely $dG/d\tau F = h(\tau c + p)$ where $\tau = (D_2/D_1) \ln$. II. The mechanism and kinetics of chemical absorption at low velocities of reaction. <i>Ibid.</i> 1219-24.—The mechanism is essentially different from the foregoing when K is smaller than the diffusion coeffs.; it is identical in all 3 cases $K < D_1 < D_2$, $K < D_2 < D_1$, and $D_2 < K < D_1$. At the boundary, both x_0 and c_0 are not equal to 0. The rate of absorption can be expressed in terms of the equil. concn. x_0 of the dissolved (not yet reacted) gas, as detd. by Henry's law $p = Hx_0$; from $dG/d\tau F = h(x_0 - x)$, it is calcd. that $G = hF\tau(x_0 - x_m)$ (where the subscript m denotes the logarithmic mean). Corrected expressions are derived for the case when K, although still less than D_1, is close to it; the liquid phase is then sepl. into 2 layers at the limit of</p>		<p>2</p>			
<p>ASS-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>					
1950-1954		1955-1959		1960-1964	
1950-1954		1955-1959		1960-1964	
1950-1954		1955-1959		1960-1964	

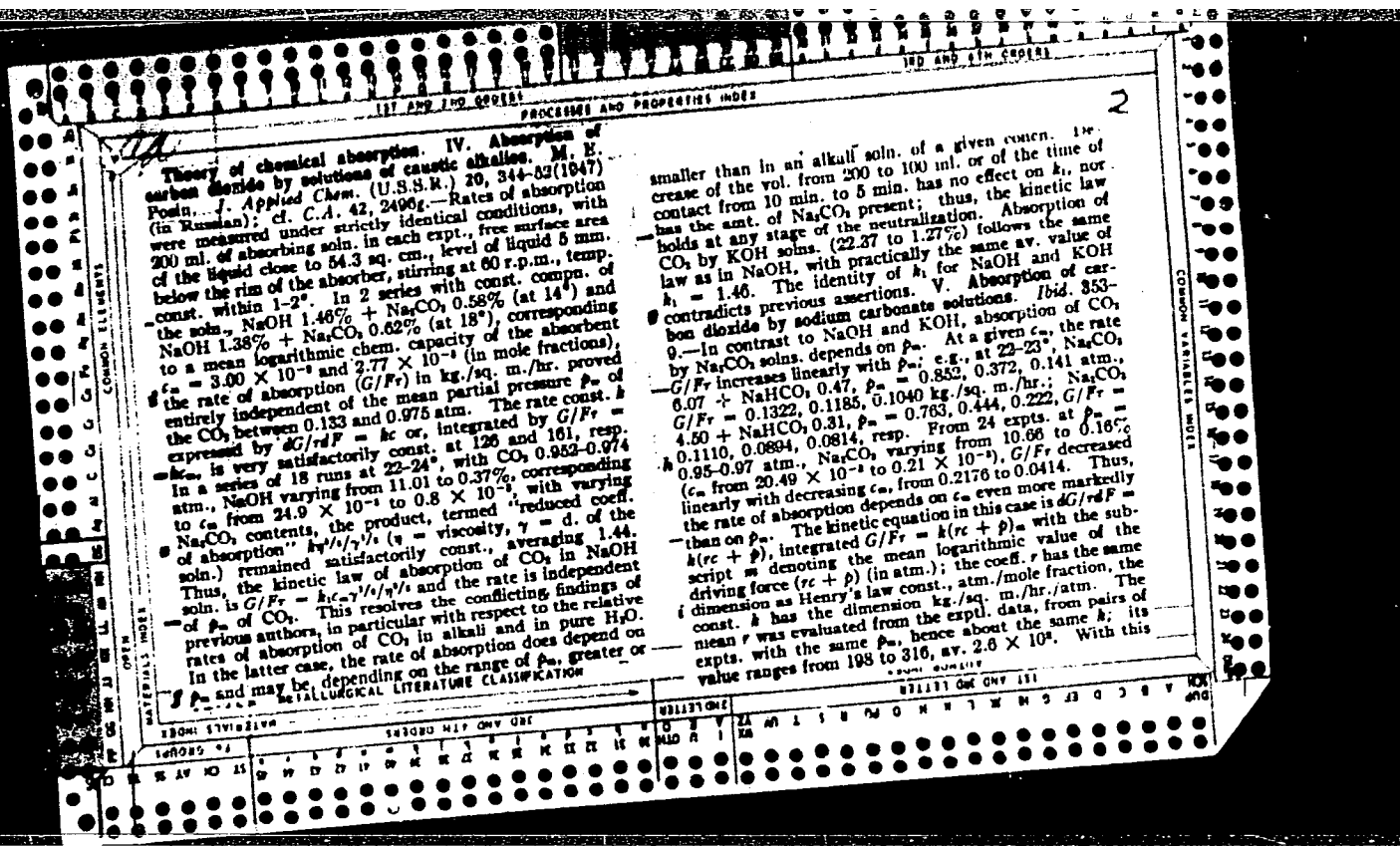
which $s = 0$ and c is not equal to 0. Finally, with $D_1 < K < D_2$ the gas arriving at the boundary cannot diffuse into the liquid and every mol. entering the liquid film will react immediately; the reaction zone lies exactly at the boundary where, however, c is not equal to 0. The complete strict expressions derived for the rate can be simplified approx. into $dG/dP \approx k_p c$ and $G \approx k_p P c$, where the const. k is identical with the second-order reaction-rate const. N. Thun



Theory of chemical absorption. III. Kinetics of the scrubber process at high reaction velocities. M. E. Pozin (Leningrad Technol. Inst.). *J. Applied Chem.* (USSR) 20, 306-18 (1947) (in Russian); cf. *C.A.* 42, 156. — In the case $K_r > D_1 > D_2$, that is when the velocity of the chem. reaction is greater than the rate of diffusion D_1 of the active chem. absorbent in the liquid, and D_2 is greater than the rate of diffusion D_2 of the absorbed substance, treatment by analogy with heat transfer gives, for the concn. c of the absorbent as a function of the height h of the scrubber and of the thickness δ of the liquid film, the differential equation $D_1(\partial^2 c/\partial \delta^2) = u(\partial c/\partial \delta)$, where u = linear velocity of the liquid; substitution of $u = \frac{1}{2} \delta [1 - (\delta^2/\delta_0^2)]$, (where δ_0 = mean velocity, δ = thickness of the diffusion layer of liquid), $\gamma = c/c_0$ (where $c_0 = c$ at $h = 0$), $f = \delta/\delta_0$, and $\phi = D_1 h/\delta \delta_0$, transforms the equation into $\delta^2 \gamma/\partial \delta^2 = \frac{1}{2} f (1 - f^2) (\partial \gamma/\partial f)$; its solution leads, for the total mean absorption coeff. k , to $k \delta/D_1 = 3.467 + (0.3725/\phi)$ where the (dimensionless) left-hand member is an analog of Nusselt's criterion; it follows that in the absence of δ motion of the liquid in the scrubber ($\delta = 0$, $\phi = \infty$), the min. value of k is $k_{min} = 3.467 D_1/\delta$; this still holds approx. at small δ . In the case of

turbulent motion, it is legitimate to put $u = \text{const.} = \delta$ which simplifies the initial differential equation to $\delta^2 \gamma/\partial \delta^2 = \partial \gamma/\partial \delta$ and leads to $k \delta/D_1 = 3.467 + (0.310/\phi)$ and $k_{min} = 3.467 D_1/\delta$. Thus, the linear relation between $k \delta/D_1$ and $(1/\phi)$ holds under all conditions of flow in the scrubber. The relation between, on the one hand, k and, on the other hand, the phys. consts. of the liquid and the geometric conditions in the scrubber, is derived on the basis of the relation $\delta \sim \delta_{lam} (\gamma D_1/\eta)^{1/2}$ (Levich (*C.A.* 37, 6861; 39, 3194)), where δ_{lam} = thickness of the laminar layer, $\gamma = d$, η = viscosity, and $\eta/\gamma D_1$ is an analog of Prandtl's criterion; the relation $\delta_{lam} \sim \text{const.} (l/d)^{1/2} (\eta/\delta \gamma)^{1/2}$, where l = length of an element of the packing, d its diam., and $\delta \gamma/\eta d$ = Reynold's criterion; the Stokes-Einstein relation $D_2 = \text{const.}/\eta$. The final expression is $k \delta = [\text{const.} \delta^{1/2} \gamma^{1/2} / (l/d)^{1/2} \eta^{1/2}] + [\text{const.} \delta^{1/2} (l/d)^{1/2} \eta^{1/2} / k \gamma^{1/2}]$. Thus, k is proportional to $\sqrt{\delta}$ (δ = mean linear velocity), but no such simple relation can be derived between k and the vol. velocity of the liquid (or d of sprinkling) Q , there being no simple general relation between δ and Q . This explains the conflicting findings with respect to the dependence of k on Q ; in particular, the max. found by Rosebaugh (*C.A.* 22, 4676) seems to indicate that, beyond a certain Q , further

increase of the amt. of the liquid fed to the scrubber results in no further increase of δ but does increase the thickness and thus decreases h . Only under certain definite geometric conditions, at moderate Q , is $\delta \sim Q^{1/2}$ and $h \sim Q^{1/4}$. More generally, $\delta = \{[(Q/a)^2 \gamma \sin \alpha / 2g]^{1/2}\}$, where a = length of the perimeter of the packing per unit area of the scrubber section, α = angle between the surface of an element of the packing and the horizontal plane; in the case of Raschig rings, $\alpha = 60^\circ$. At random packing, the eq. $\sin \alpha = \sin 45^\circ = 0.707$, and $\delta = 0.512[(Q/a)^2 \gamma / g]^{1/2}$, independent of the motion of the gas as long as friction between gas and liquid can be disregarded. In terms of the δ , γ of the absorbing liquid, the effect of γ is only significant at low δ (high Q); depending on the range of δ , increase of γ can result in either a slight increase, or a slight decrease of h but in no case does the effect of γ go beyond $(\text{const.}/\gamma^{1/2}) > h > (\text{const.}/\gamma^{1/2})$. The exptl. finding that h is roughly inversely proportional to γ is in accord with the theoretical $h \sim \text{const.}/Q^{1/4}$ at high Q (low δ). The drag characteristic of the packing elements is the ratio l/a , not their size. N. Thon



mean value k is fairly const., av. (from 37 expts.) 3.7×10^{-3} . In the graphic representation, G/F_r as a function of $(x + p)_\infty$ is satisfactorily linear, including expts. with a high proportion of NaHCO_3 , i.e. the kinetic law is valid at any stage of the neutralization. The const. k can also be detd. without knowledge of r , from the rate of absorption of CO_2 by an entirely neutralized (NaHCO_3) soln. ($x = 0$). In this particular case, $G/F_r = k(p - p_\infty)$, where p_∞ = equil. pressure of Cl_2 over the CO_2 satd. soln. Such expts. gave k (av.) = 3.6×10^{-3} , in good agreement with the value detd. with the aid of r . The same value of $k = (3.6-3.7) \times 10^{-3}$ is obtained by graphic extrapolation of the plot of G/F_r against x_∞ to $x_\infty = 0$, from the intercept on the ordinate. VI. Absorption of chlorine and of sulfur dioxide by solutions of sodium hydroxide. Absorption of chlorine by benzene. M. E. Fomin and M. A. Opykhina. *Ibid.* 823-31. (1) Absorption of Cl_2 by solns. of NaOH (contg. various amts. of Na_2CO_3 and of NaCl) follows the same law as absorption of CO_2 in NaOH , i.e. $G/F_r = kx_\infty$, independently of p and governed solely by the chem. capacity of the absorbing soln. From 16 expts. at $17-20^\circ$, $10-20$ min., NaOH 18.61-3.58%, x_∞ 42.96×10^{-3} to 5.04×10^{-3} , Cl_2 in the gas 3.58%, c_∞ 42.96×10^{-3} to 5.04×10^{-3} , corresponding to (total pressure 1 atm.) 100.0-30.9%, averaging p_∞ 1.021 (0.240) atm., $F = 5.544 \times 10^{-3}$ sq. m., r varying from 0.04366 to 0.01217 m/sec, γ from 1317.6 to 1041.0 kg./cu. m., the "reduced" coeff. $k_1 = k\gamma/r$ (av.) = 3.35. In units of mole/sq. m./hr. (at $c = 1$), $k_1 = 47.2$ for Cl_2 , as against 32.7 for CO_2 . That Cl_2 is absorbed by NaOH about 1.5 times as fast as CO_2 is due mainly to the greater velocity of diffusion in soln. of NaCl and to the greater velocity of diffusion in soln. of NaCl and NaOCl as compared with Na_2CO_3 . Actually, NaCl diffuses approx. twice as fast as Na_2CO_3 . (2) Absorption of SO_2 by solns. of NaOH follows the same kinetic law as

that of CO_2 by Na_2CO_3 , the driving force being the sum $(x + p)_\infty$. From expts. with NaOH 18.78-3.58%, SO_2 100-20.1%, 10 min., k (av.) = 22.1, k (av.) = 6.18, the plot of G/F_r against $(x + p)_\infty$ is fairly linear. (3) The case of absorption of Cl_2 by CaH_2 illustrates a system in which the rate of the chem. reaction is much smaller than the rate of diffusion of the gas in the liquid and which should be governed by $dG/dF = k(x_\infty - x)$ (where x_∞ = mole fraction of the absorbed but unreacted gas in the liquid, x , the same at equil.), integrated $G/F_r = k(x_\infty - x)_\infty$. The rate of the chem. reaction was controlled by soln. of 0.16 g. FeCl_3 /100 ml. as a catalyst; no reaction takes place in the absence of catalyst at 20° , and the equil. is governed by Henry's law. At 20° , the Henry const. of Cl_2 in CaH_2 as a function of the partial pressure p of Cl_2 in the gas; at $p = 48.8, 123.4, 282.5, 416, 494, 693, 763$ mm. Hg, $x_\infty = 0.0152, 0.0367, 0.0684, 0.1091, 0.1378, 0.1809, 0.2080$. Expts. with the FeCl_3 catalyst were conducted at $18-24^\circ$ so as to give a slow chem. reaction, with Cl_2 in the gas 100-22.6%, compn. of liquid (CaH₂, PhCl) 100.0 to 0, 76.25 to 23.75, and 43.25 to 56.75 and with PhCl as the only product of the reaction. In all cases the magnitude $p = [1 - (dc/dx)] = 1 + (c_\infty - c)/(x_\infty - x)$ (where i and f = initial and final, resp.), expressing the acceleration of the absorption by the chem. reaction, is independent of both the concn. of the chem. reaction, is independent of both the concn. of Cl_2 in the gas and of the concn. of CaH_2 , averaging $p = 2.3$. The plot of (G/F_r) against $(x_\infty - x)_\infty$ is strictly linear, with k (av.) = 3.6×10^3 kg./sq. m./hr./mole fraction. The rate of absorption of Cl_2 in CaH_2 in the presence of a slow chem. reaction is thus governed by both the concn. of the gas phase and the chem. capacity of the absorbing liquid. N. Thon

POZIN, M.Ye.; KOPYLEV, B.A.; KYRSHEV, I.P.

Rate of apatite decomposition in unsaturated solutions of the
system $\text{CaO} - \text{P}_2\text{O}_5 - \text{H}_2\text{O}$. Zhur.prikl.khim. 36 no.6:1175-1180
Je '63. (MIRA 16:8)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета i
Sofiyskiy khimiko-tekhnologicheskii institut.
(Apatite) (Phosphoric acid)

POZIN, M.Ye.; TARAT, E.Ya.; MRNYAK, L.

Leaking of liquid through the openings of a grid tray in a foam apparatus. Izv.vys.ucheb.zav.;khim. i khim.tekh. 6 no.2:310-319 '63. (MIRA 16:9)

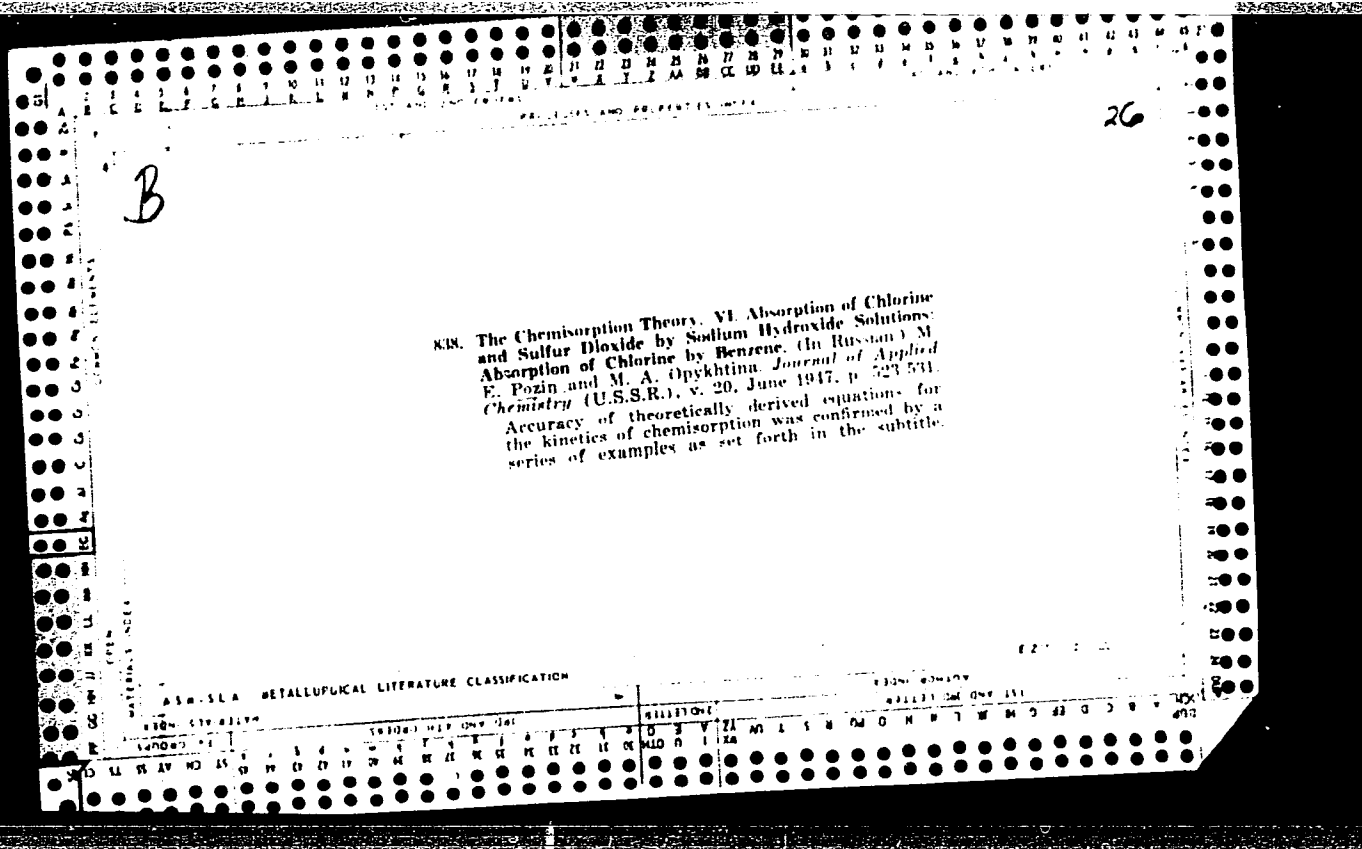
1. Leningradskiy tekhnologicheskii institut imeni Lensovetu,
kafedra tekhnologii neorganicheskikh veshchestv.
(Plate towers)

POZIN, M. Ye.

Absorption

Theory of chemisorption. Part 5. Absorption of carbon dioxide by sodium carbonate solutions, Zhur. prikl. khim. 20, No. 4, 1947.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.



Cf

Theory of chemical absorption. VII. Absorption of ammonia by acids. M. E. Pozin and M. A. Smirnova. *J. Applied Chem. (U.S.S.R.)* 20, 754-61 (1947) (in Russian); cf. C.I. 42, 1129. The rate of absorption G/Er (kg./sq. m. hr.) of NH_3 (11.3-35.2% in mixt. with air) in dil. H_2SO_4 (2.31-17.11%) varies strongly with the partial pressure p of NH_3 , to a lesser extent also with the chem. capacity ϵ of the absorbent. It can be represented by $G/Er = k(\epsilon + p)_w$, in analogy with the absorption of CO_2 in Na_2CO_3 and of SO_2 in NaOH (cf. previous papers in this series for symbol meanings). Although the exptl. values of ϵ vary within rather wide limits (0.55-1.50), it is sufficient to use a mean $\epsilon = 1.01$, inasmuch as ϵ is ~ 1 . With this value of ϵ , one finds a satisfactorily const. $k = \text{av. } 10.16$, between 17° and 22°, 5 min.; better stability of the temp. is difficult to obtain owing to the strongly exothermal nature of the process. As the absorption of NH_3 is mainly detd. by the resistance of the gaseous film, the change of the viscosity of the liquid (0.01054-0.01428 poise) and of its d. (1015.1-1118.4 kg./cu. m.) has little effect on k . At relatively high p and low ϵ (dil. acid), the rate of absorption follows approx. the simpler law $G/Er = k p_w$, but this does not hold at higher concns. of the acid. Thus, with 10% and 30% NH_3 , and

20% H_2SO_4 , k varied by the computed formula by resp. 2 and 4 times as great as the correct k . Since k is independent of ϵ , it should remain unchanged also for $\epsilon = 0$, i.e. for absorption of NH_3 in pure H_2O . This is true if p is replaced by the difference $(p - p_0)$ where $p_0 =$ equil. pressure of NH_3 over the aq. soln.; absorption of NH_3 in H_2O is actually found to follow $G/Er = k(p - p_0)$ with $k = 10.55$. The value of k remains, further, practically the same in the absorption of NH_3 by acids other than H_2SO_4 . With the acids initially 1 N, NH_3 22%,

at 18-21°, 10 min., one has, assuming $\epsilon = 1.01$, the following k : H_2SO_4 10.97, HNO_3 12.58, HCl 10.68, HCOOH 7.92, AcOH 8.11, $\text{CO}_2\text{HCO}_2\text{H}$ 9.97, $\text{CO}_2\text{HCH}_2\text{CH}_2\text{CO}_2\text{H}$ 8.08. The differences are due, partly, to the error introduced by the assumption of the same ϵ value for the different acids, partly to differences of mobility of the diffusing particles which in org. acids, in contrast to the strong inorg. acids, are largely undissoc. molts. This is borne out by the rough parallelism between k and the dissoc. const. of the acid. The factor responsible for the variations of k is the rate of diffusion in the liquid and not primarily its pH, as suggested by Williamson and Mathews (C.I. 19, 500); nor is there a relation between k and the surface tension of the liquid, contrary to Kallender (C.I. 35, 31, 82619) and to G. H. Smith and Quinn (C.I. 35, 72719).

24

*873. Theory of Chemisorption. VIII. The Rate Coefficient of Adsorption. (In Russian.) M. E. Pozin. *Zhurnal Prikladnoi Khimii* (Journal of Applied Chemistry), v. 20, Oct. 1947, p. 963-975.

The effects of scrubber shape, hydrodynamic conditions of operation, and physical properties of the adsorbent on the rate coefficient for absorption of a gas by a liquid, followed by rapid chemical reaction without control of the process by partial pressure and rate of flow of gas, were investigated. Formulas are proposed for determination of the coefficient. Theoretical values are in good agreement with experimental data.

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

POZIN, M.Ye.; KOPYLEV, B.A.; ZINYUK, R.Yu.

Liberation into the gas phase of fluorine compounds formed in the acid processing of apatite concentrates. Zhur.prikl.khim. 37 no.1:9-16 Ja '64. (MIRA 17:2)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета.

POZIN, M.Ye.

Processes of chemical absorption. Sbor.rab.Inst.prikl.khim. no.39:
91-123 '47. (MLRA 7:3)
(Absorption)

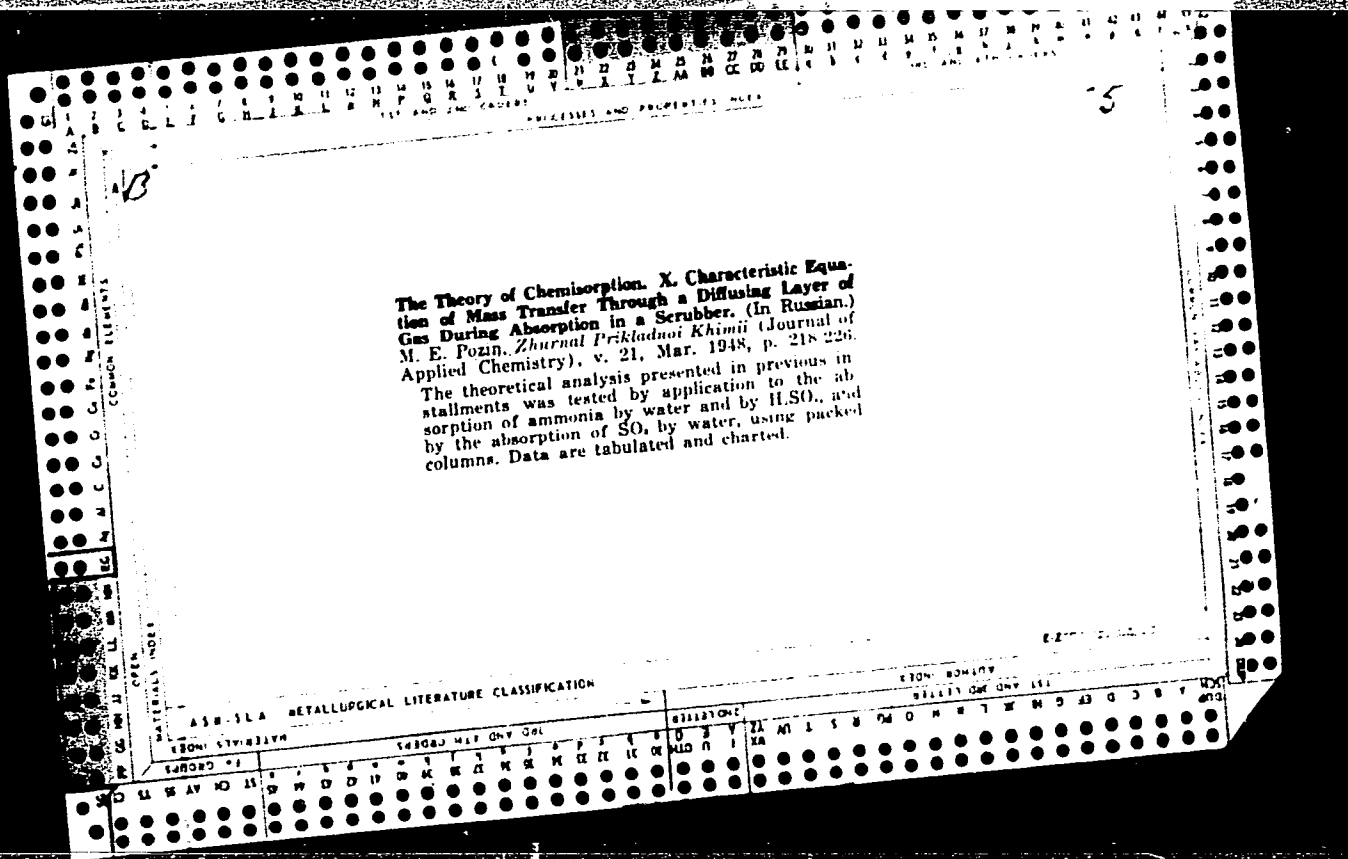
POZIN, M. E.

Pozin, M. E., To the article by E. Ia. Turkhan "On the absorption rate of carbon dioxide by solutions of hydroxides." p. 1184.

A review.

SO: Journal of Applied Chemistry (USSR) No. 11 (1948).

COMMON ELEMENTS										1ST AND 2ND CROSS										3RD AND 4TH CROSS									
<p><i>Ch</i></p> <p>2</p> <p>Theory of chemical absorption. IX. Theoretical foundations of scrubber absorption. M. E. Poshin. <i>Zhur. Priklad. Khim.</i> (J. Applied Chem.) 21, 68-81(1948); cf. C.A. 43, 23g.—Analytical treatment of the partial differential equations of absorption for the gaseous and the liquid film, for the 4 combinations ILL', ILL', ILL', and ILL' (I = direct current, II = countercurrent, L = laminar flow of the gas, T = turbulent flow of the gas, L' = laminar flow of the liquid) leads to graphic representations of the distribution of the absorbable gas and of the concn. along the height of the scrubber for cases I and II, to equations for the gaseous and liquid-film absorption coeffs. k_g and k_l, and equations for the Nusselt criterion for the above 4 cases. The final expressions, in terms of the mean linear velocities of the gas (v) and of the liquid (w), the d, γ, the viscosity η, the length of the packing element l and the equiv. diam. d (omitting the obvious subscripts g or l) and taking into account friction between gas and liquid, are, for the liquid film, $k_l = \text{const. } w^{0.5} \gamma^{0.17} / (l/d)^{0.5} \eta^{0.43}$ (equation 1) with the values of the const. different in cases I and II. For the gaseous film, one has, in case I, $k_g = \text{const. } (l/d) w^{0.75} \eta^{0.17} / d^{0.75} v^{0.75}$ (equation 2), where $w = v[1 - \theta(u/v)]$, with $\theta = 1.5$ or 1, resp., for laminar or turbulent flow of the liquid. In case II, with fixed w and v, the expression of k_g is analogous to equation 1; at variable w and v, and at relatively large v and small w, the expression for k_g is of the form of equation 2, but with $w = v[1 + \theta(u/v)]$. Thus, the relation between, on the one hand, k_l and k_g, and, on the other hand, the phys. consts. of the gas and the liquid, and the geometrical conditions in the scrubber, depends on the mutual directions and the ratio of the rates of flow of the liquid and the gas streams. In case I, if one formulates $k_g = \text{const. } v^a$, the exponent a is not const., but varies with u/v. In case II, the exponent a varies from 0.75 at low u/v to 1 at high u/v. The total absorption coeff. $k = 1/(1/k_g) + (H/h_l)$ if the driving force is interpreted as the mean logarithmic difference between the concn. of the absorbable gas and the equil. concn., or $k = 1/(1/k_g) + (1/k_l)$ if it is expressed in units of concn. of the liquid phase. N. Thon</p>																													
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>																													
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Pressure of nitrogen oxides over nitrous. M. E. Pozin and E. M. Flerninskaya. *Zhur. Priklad. Khim.* (J. Applied Chem.) 21, 708-16 (1948).—The causes of the striking discrepancies between the (commonly accepted) data of Berl and Seeger (C.A. 26, 2014), of Kudryavtsev (C.A. 28, 2879), Tikhonov (C.A. 28, 1249), of Santouche and Mondler (C.A. 23, 330), and of others, were investigated by renewed detns. (temp. $\pm 0.05^\circ$) on nitrous prepd. by soln. in H_2SO_4 of cryst. NOSO_2H made by (1) satn. H_2SO_4 with N_2O and filtration under vacuum; (2) satn. of pure HNO_3 with SO_2 , and (a) filtration under 300 mm. Hg until complete cessation of drops, (b) filtration under 400 mm. and drying over P_2O_5 , (c) filtration under 300 mm., standing 2 months over concd. H_2SO_4 , then refiltration under 600 mm. (to remove the H_2O formed through decomposition) and drying over P_2O_5 . These preps. had the compn.: I, H_2SO_4 74.61, N_2O 77.06%; IIa, H_2SO_4 75.03, N_2O 77.45, HNO_3 0.78%; IIb, H_2SO_4 77.93, N_2O 24.30%. Nitrous made from I, IIa, and IIc was free from HNO_3 . Nitrous made with the flow method, with N free from O_2 , gave the following values of vapor pressure p (in mm. Hg): nitrous from I (H_2SO_4 76.42%, N_2O 0.211 mole/l.) at 30 and 50° , $p = 0.10$ and 0.47; nitrous from IIa (78.87,

0.238), at 30 and 50°, $p = 0.58$ and 1.15; nitroso from IIb (75.4, 0.238), at 30, 50, and 60°, $p = 0.41$, 0.60, and 0.94; nitrite from IIc (73.3, 0.201) at 30, 50, and 57°, $p = 0.45$, 1.24, and 1.67. For acids with lower N_2O_5 contents: I (73.36, 0.100) at 30, 50, and 60°, $p = 0.10$, 0.65, and 0.82; IIc (73.36, 0.062) at 30, 50, and 56°, $p = 0.35$, 0.76, and 0.98. For an acid with a higher N_2O_5 content, I (70.76, 0.321) at 30, 40, and 53°, $p = 0.10$, 0.33, and 0.67. The data of B. and S. are much too high, the reason, on the basis of the present details, being obviously contamination with HNO_3 . The data of S. and R. are much too low. An important source of error, which, in particular, explains the discrepancies between K. and T., is the use of the permanganate method for the detn. of small amts. of N_2O_5 ; this method is correct only if the amt. of N_2O_5 is over 0.05 g./100 ml., at lower concns. Only the colorimetric method is permissible. Data for nitroses of low N_2O_5 contents and at low temps. are not yet available.

N. Thon

2

Velocity of an absorption accompanied by a reversible chemical reaction. M. E. Posin. *Zhur. Priklad. Khim.* (J. Applied Chem.) 21, 822-8 (1948). Whenever the chem. reaction of a gas with a soln. consists in a reaction that is reversible and leads to an equil. before its stoichiometric completion, the "chem. capacity" c of the soln. is not tantamount to the concn. of the absorbing substance, but is smaller. The plot of c as a function of the degree of neutralization n shows a steeper fall than in the case of an irreversible reaction, and c becomes zero at the equil. neutralization point $n_e = 100\%$. The curve is linear only when the total no. of mols. of the absorbent undergoes no change by the reaction. With a given equil. const., n_e is obviously a function not only of the concn. of the absorbent, but also of that of the absorbable gas, and is, consequently, different at the initial and the final stage of the scrubber process. If the equil. const. is known, the chem. capacity c corresponding to any stage of neutralization n can be detd. graphically. In the case of a fast chem. reaction, the previously (C.A. 42, 156) derived equation for the rate of absorption remains valid. If the establishment of the equil. is slow, the appropriate rate equation is $dc/dt = k(p - p_e)$ (t = time, F = contact area, p = partial pressure of the absorbable component in the gas, p_e = the same at equil.), with $k = 1/[(1/k_g) + (dl/k_l)]$ (l = Henry's coeff., subscripts g and l referring to the gas and liquid films, resp.), and $\sigma = 1 - (dc/dp)$. These equations retain their validity even when the solvent has a significant vapor pressure of its own. N. Thon

POZIN, M. YE.

PA 11/4/T25

USSR/Chemistry - Absorption
Chemistry - Reaction Kinetics

Aug 48

"The Speed of Absorption Associated With Reversible
Chemical Reactions," M. Ye. Pozin, Leningrad
Technological Inst, 5 pp

"Zhur Priklad Khimii" Vol XXI, No 8

When a reversible chemical reaction takes place
in absorption process, chemical volume of absorbent
depends on its composition and on concentration of
gas being absorbed. Describes graphical method to
determine chemical volume. Recommends suitable
equations for particular cases. Submitted 31 Mar 48.

11/49T25

Pozin, M.E.

U S S R .

✓ Rate of absorption of carbon dioxide gas by solutions of hydroxides. M. E. Pozin. *Zhur. Priklad. Khim.* 21, 1184-5 (1948).—In connection with a paper by Turkhan (*C.A.* 43, 1631b), it is pointed out that increase in concn. of hydroxide in aq. soln. cannot lead to conditions where the only rate-limiting step in the absorption of CO_2 would be the diffusion resistance in the gaseous film, since the absorption product has to be removed from the soln. surface. Cases where absorption rate depends on concn. of the chemisorbent only, and not on the concn. of CO_2 , should also be possible.

Andrew Dravnieks

POZIN, M. YE.

"Technology of Inorganic Salts" (Tekhnologiya Mineral'nykh Soley), M. Ye. Pozin, Goskhimizdat, Moscow/Leningrad, 1949, 688 pages, 23 rubles 80 kopeks.

SO: Uspekhi Khimii, Vol 18, #6, 1949; Vol 19, #1, 1950 (W-10083)

CA

2

Velocity of chlorination of solutions of bromides. M. I. Porfir, M. I. Shabashova, and S. D. Gol'denbets (Leningrad Technol. Inst.). *Zhur. Priklad. Khim.* (J. Applied Chem.) 22, 467-7 (1949); cf. *C. A.* 42, 155, 4420c. The rate of absorption of Cl_2 from the gas by aq. solns. of KBr, NaBr, and MgBr_2 is governed by the previously established law $G/F = k(\epsilon + p)\Delta$, where G = amt. absorbed in kg., F = surface area in sq. m., t = time in hrs., ϵ = chem. capacity of the absorbent in mole fractions, p = partial pressure of Cl_2 in atm., k = dimensional coeff., and the mean logarithmic $(\epsilon_1 + \epsilon_2)/2$ is the mean driving force of the absorption. The linearity between the rate of absorption G/F and the initial concn. of Br^- in the soln. at const. p (0.2-1) is the better the higher $[\text{Br}^-]$; with KBr, this linearity and the constancy of k are satisfactory between 0.5 and 0.68%; Br⁻. At much lower $[\text{Br}^-]$, 0.01-0.4%, the expl. rate deviates above the straight line passing through the origin, as with diminishing concn. of the chem. absorbent the rate of absorption approaches increasingly to

that corresponding to absence of a chem. absorbent. Analogous effects were found in solns. of NaBr and of MgBr_2 . The process evidently is accomplished in 2 stages, one consisting in the chem. displacement reaction, the other corresponding to simple absorption of Cl_2 , not accompanied by a chem. reaction. Only the latter is significant at low ϵ . The absorption coeff. k (kg./sq. m. hr. atm.) is very close for KBr (13-17%), NaBr, and MgBr_2 (18-20%): $k = 0.26, 0.27$, and 0.24, resp. N. Thon

CA

2

Kinetics of absorption of bromine by liquid absorbents.
M. E. Pozin and E. S. Tumarkina. *Zhur. Priklad. Khim.*
23: 399-408, 1950. *J. Applied Chem. U.S.S.R.* 23, 415-27
(1950) (Pub. 1051) (Engl. translation). The absorption
rate was detd. by passing the gas contg. Br_2 above the sur-
face of a soln. which was stirred during the expt. The
diffusion through the gas film detd. the rate of absorption of
 Br_2 by NaOH (up to 10% of Br_2 in the gas phase), by
 Na_2CO_3 (up to 2-3% of Br_2), and by $FeBr_3$ soln., but in the
last case only for very low concn. of Br_2 in the gas phase.
In each case, the absorption is given by: $g = K_1 F t P_{Br_2}$,
where K_1 is the coeff. of absorption rate detd. by the gas
film (kg. per sq. m. per hr. per atm.), F the absorption sur-
face in sq. m., t the time in hrs., and P_{Br_2} the partial pressure
of Br_2 . For gaseous mixts. with higher percentage of Br_2 ,
the diffusion through the liquid film affects the rate of mass
transfer of Br_2 , and the exptl. results can be well expressed
by the equation: $g = K F (rC + P_{Br_2})$, where r is the coeff.
and C the molal concn. of absorbing soln. Values of r
and K are given. B. A.

CA

2

Thermochemical decomposition of ferrous sulfate. I.
M. E. Pozin and A. M. Ginstling. *Zhur. Priklad. Khim.*
23, 1149-56(1950); *J. Applied Chem. (U.S.S.R.)* 23,
1227-34(1950)(Engl. translation); cf. *C.A.* 43, 2296d.—
With a view to the utilization of waste FeSO_4 , the kinetics
and compn. of the products of the thermal decompn. of
 FeSO_4 were studied. A temp. of 700° was necessary to
produce better than 95% decompn. in one hr. In a mixt.
contg. 8% C in the form of coal (which was more effective
than coke), better than 95% decompn. occurred in 10 mins.
at 650° . This was equiv. to the rate at this temp. in a mixt.
contg. 16% pyrite, or one contg. 2.5% C and 16% pyrite.
The SO_3 was almost completely converted to SO_2 by the re-
ducing agents. Decreasing the particle size of the FeSO_4
by a factor of 2 almost doubled the reaction rate, whereas
decreasing the particle size of the coal by a factor of 6 in-
creased the reaction rate by a factor of only 1.25.

K. T. Walduck

2

CA

Thermochemical conversion of ferrous sulfate. M. R. Porm and A. M. Gimatling. *Zhur. Priklad. Khim.* (J. Applied Chem.) 23, 1245-6 (1950). The velocity of disocn. of pure FeSO_4 at 650 and 700° decreases with increasing content of O_2 in the gas phase. At 650°, with the gas flowing at 3 l./hr., the disocn. of 2 g. of $\text{FeSO}_4 \cdot \text{H}_2\text{O}$ in 1 hr. attained 72% in pure N_2 , 49.5% in air; at 700°, in 30 min., 72% in N_2 , 81% in air. In mixts. of FeSO_4 with reductant (e.g. C), the rate of the conversion increases with increasing O_2 content in the gas. With 7.1-9.5% C, at 650°, rate of flow of the gas 3 l./hr., the yield of $\text{SO}_2 + \text{SO}$, per 2 g. mixt. in 10 min. is 77, 86, and 101%, with 0, 8, and 21% O_2 in the gas, resp. This increase of the reactivity of FeSO_4 with the O_2 content of the gas phase is the more marked the higher the content of C in the mixt. At const. compn. of the batch, the $\text{SO}_2:\text{SO}$ ratio in the products decreases with increasing O_2 content in the initial gas. N. Thon

CA

The thermochemical transformation of ferrous sulfate
H. M. J. Purn and A. M. Ginsting / *J. Appl. Chem.*
CAN. J. 23, 1321-6 (1950) Engl. translation: See C. I.
45, 22967
H. R.

F.A.

2021. CLEANSING OF FLUE GASES IN FOAM GAS WASHERS. Iozin, M.E. (pap. to Conf. on Plant for cleaning (Flue) Gases Leningrad, Dec. 1951, abstr. in *Fuel Econ. Topliva (Fuel Econ.)* Apr. 1952, 37). A flue gas washer devised by the Leningrad Technological Institute has been tried successfully in the laboratory and at a power station. It is said to remove 99% of ash and about 90% of sulphurous anhydride. Operation is based on conclusions from the laws governing diffusion process. It consists of a reservoir with a grid. The gas is led under the grid and water goes on the grid. The gas is distributed through the holes in the grid, passes through a layer of water and forms with it a moving foam. No foaming agents are required. The height and quality of the layer of foam depend on the type of grid, the gas velocity and the height of the sill at the water outlet. A production model is in hand.

General + 3 types
Chemistry

Classification of reactions between solid bodies. M. E. Pozin and A. M. Ginstling. *Zhur. Priklad. Khim.* (J. Applied Chem.) 24, 37-46 (1951). Instead of the systems of classification of Jander (*Z. anorg. Chem.* 41, 73 (1928)), Garner (*C.A.* 33, 279), Hüttig (*C.A.* 35, 5379), and others, a system is proposed on the basis of the kinetic character of the reaction, into reactions (I) rate-detd. by the true chem. kinetics, (II) rate-detd. by diffusion, and (III) rate-detd. by distn. or evapn. In class I the rate law can be of any known kinetic order; reactions of class II are characterized by a rate law of the form $dG/dr = k(1-G)^{1/2}/[1 - (1-G)^{1/2}]$, and class III by a rate law $dG/dr = k(1-G)^{1/2}$, where G = degree of conversion. Class III comprises, in particular, reactions of formation of spinels, sulfides, etc. N. Thon

POZIN M./E.

2

Thermochemical conversion of ferrous sulfate. III.
 M. E. Pozin and A. M. Ginstling, *J. Applied Chem.*
U.S.S.R. 24, 161-7 (1951) (Engl. translation); cf. *C.A.* 45,
 2206d. —The thermochem. conversion of ferrous sulfate in-
 volves a series of intermediate reactions, the slowest of
 which is the reaction $\text{Fe}_2(\text{SO}_4)_3 \rightleftharpoons \text{Fe}_2\text{O}_3 + 3\text{SO}_3$, the rate of
 which is governed by the partial pressure of the SO_3 in the
 reaction zone. The reaction of ferrous sulfate with coal
 and pyrites takes place via the gas phase and is practically
 independent of the actual surface of contact between the
 particles of the solid reducing agent and the sulfate. At the
 beginning, the process rate is limited by the excess of free O
 in the reaction zone and by the intensity of its combustion,
 which shifts the equil. of the dissocn. of the FeSO_4 and the
 SO_3 toward the formation of the end products of the process,
 SO_2 and Fe_2O_3 . Accordingly, introducing the reducing agent
 in the initial mixt. and diminishing the percentage of O in the

initial gas intensifies the process considerably. As the dif-
 fusion layer of the solid reaction product, Fe_2O_3 , grows
 thicker, the part played by diffusion in this process in-
 creases, so that after a certain time the process rate is
 governed entirely by the rate of diffusion. The variation
 of the process rate with the size of the particles of the initial
 substances (all other conditions remaining the same) entails
 a gradual shift of the former from the region of chem.
 kinetics via an intermediate region to the region of diffusion
 kinetics: at the beginning of the process, its velocity is pro-
 portional to the surface of the particles of reducing agent;
 during the intermediate period it is a function of the particle
 size of both constituents of the mixt.; in the final period it is
 practically detd. by the size of the FeSO_4 particles alone.

A. George Stern

POZIN, M. E.

Chemical Abstracts
May 25, 1954
Acids, Alkalies and
other Heavy Chemicals

6

✓ Oxidizing space and separate denitrator in a sulfuric acid tower system. M. E. Pozin and N. E. Kirichenko. *Zhur. Priklad. Khim.* 24, 561-5(1951).--A small nonirrigated packed tower inserted before the absorption zone to oxidize the nitrous gas to the equimol. ratio, $\text{NO}:\text{NO}_2 \approx 1$, is unsuitable for good and intensive operation of present-day tower systems. A special irrigated tower denitrator inserted in parallel with the first tower is effective. Data taken in 1938 from the operation of a plant with a capacity of 100 kg. of H_2SO_4 per cu. m. per 24 hrs. or 235 metric tons/day are used for computing the degree of oxidation of nitrous gases in the free space of the packing of the first absorption tower.

V. H. Gottschalk

POZIN M. YE.
NIKOL'SKIY, B.P., redaktor; DOLGOV, B.N., redaktor; TAL'KIND, Yu.S.
[deceased] redaktor; MORACHEVSKIY, Yu.V., redaktor; POZIN, M.Ye.,
redaktor; PTITSYN, B.V., redaktor; SMIRNOV, N.I., redaktor.

[The chemist's handbook] Spravochnik khimika. Vol. 3. [Chemical equilibrium and kinetics. Solutions. Electrochemistry. Analytical and technical chemistry] Khimicheskoe ravnovesie i kinetika. Rastvory. Elektrokhimiia. Analiticheskaiia i tekhnicheskaiia khimiia. Leningrad, Gos.nauchno-tekhn. izd-vo khim. lit-ry. 1952. 1190 p. [Microfilm]
(Chemistry--Handbooks, manuals, etc.) (MLBA 7:10)

POZIN, M. YE.

M. Ye. Pozin, and L. M. Batuner, Matematicheskiye metody v khimicheskoy tekhnike
(Mathematical Methods in Chemical Engineering), Goskhimizdat. - 1953

The booklet describes methods of mathematical solution of various problems of chemistry, chemical technology, and technique, and presents numerous examples of the solution of specific problems which chemists encounter in their practical work.

The book is intended for production and research chemical engineers, and may serve as an aid for students of chemical technology institutes, and postgraduate students.

SO: Sovetskoye knizh (Soviet Books), No. 186, 1953, Moscow, (U-6472)

FOZIN, M.E.

Philosophical basis of the "classical" theory of "solid
phase" processes. A criticism of the Temmerman-Hedvall
conceptions. M. E. Fozin and A. M. Ginzburg. Zhur.
Priklad. Khim. 26, 681-684 (1953); cf. C.A. 46, 7811k.—
The theory that solid reagents interact directly to form a
compd. of least free energy is criticized and a participation
of small amts. of liquid or gaseous phase in the reactions is
postulated. S. Pakswar

DR2
68.55

POZIN, M. E.

3

USSR.

✓Heat exchange in cross-flow streams during evaporation
and condensation. M. E. Pozin. J. Appl. Chem.
U.S.S.R. 26, 1079-88 (1976) (Engl. translation).—See C.A.
48, 7940i.
H. L. H.

POZIN, M.Ye.

Heat exchange in counter flow during evaporation and condensation. *Zhur. prikl. khim.* 26 no.11:1133-1156 N '53. (MLBA 6:11)

1. Leningradskiy tekhnologicheskii institut imeni Leningradskogo soveta.
(Thermodynamics)

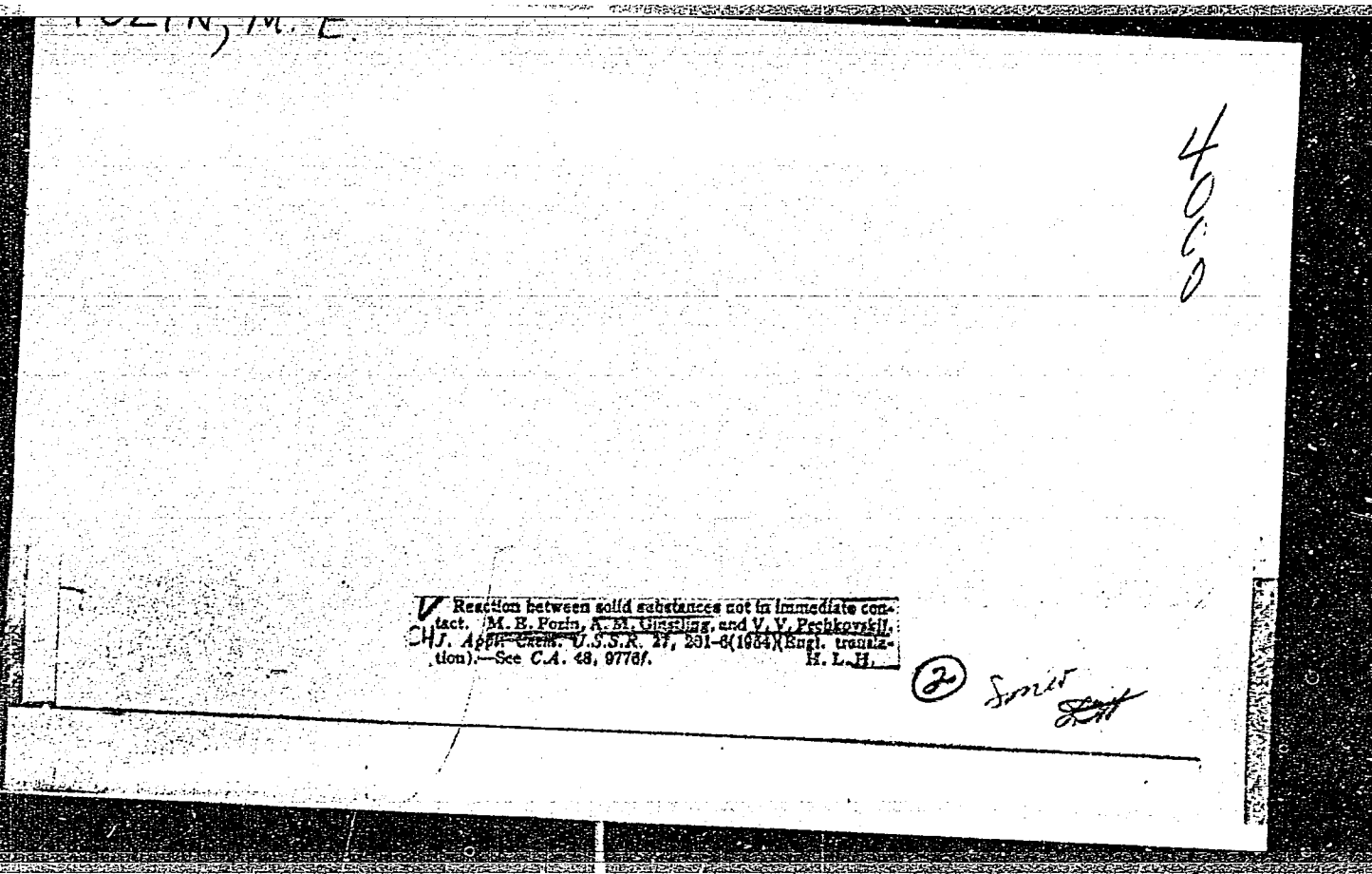
POZIN, M.Ye.; MUKHLENOV, I.P.; VOL'FKOVICH, S.I., akademik.

Foam conditions for the processing of gas-fluid systems. Dokl. AN SSSR 92 no.2:
393-396 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Vol'fkovich). 2. Leningradskiy tekhnologicheskii
institut im. Lensoveta (for Pozin and Mukhlenov).
(Foam) (Fluid dynamics)

POZIN, M.E.

Foam formation as a means for gas-liquid reactions. M. E. Pozin, I. P. Mukhlenov, E. S. Tumarkin, and E. Ya. Taraf (Leningrad Technol. Inst., Leningrad). *Zhur. Priklad. Khim.* 27, 12-21 (1954). —The advantages of foam formation in mass- and heat-transfer reactions and dust and smoke removal are given analytically and mathematically. A diagrammatic sketch of a perforated plate column with liquid-sealed overflow from each plate is shown. The perforation of the plates can be of any shape and if desired at an angle to the direction of flow. The back pressure of such column approaches that of a packed tower while the reaction rate approaches the efficiency of a bubble tower at the flooding point. The surface of contact is increased many fold while diffusional resistances decreased. It is possible to operate such a column at a gas rate of 0.7-4.0 m./sec. with a wide range of liquid flow. I. Bengowitz



POZIN, M. E.

Reaction between solid substances not in immediate contact. M. E. Pozin, A. M. Ginstling, and V. V. Pechkovskii. *Zhur. Priklad. Khim.* 27, 273-9 (1954); cf. C.A. 46, 7811h. — This work was undertaken to refute earlier theories of Tamman and others that the gaseous phase played no role in chem. processes in solid mixts. Mixts. of dry, chemically pure solids, 0.06–0.088 mm., previously studied by Tamman and by Hedvall were chosen for this work. In the first series of expts. sepn. was achieved by large proportions of inert powders of Al_2O_3 and SiO_2 added to: $CuSO_4 + PbO$; $ZnSO_4 + 6Cu$; $ZnS + 4.8CuO$, at 500, 625, and 650° (the last 2 mixts. were heated in a current of N_2 3 l./hr.). The effect of the presence of inert powders was very small: none in the first mixt.; in the 2nd mixt. the degree of reaction increased from 41.1 for zero inerts to 48.2 and 46.4% for 8 moles of Al_2O_3 and SiO_2 , resp.; for the 3rd mixt. there was a decrease from 73.9 to 72.3 and 70.8% as the proportion of the oxides increased from 0 to 6. In the 2nd series of expts. each powder was compressed into disks (25 mm. in diam. and 2–4 mm. thick) with sufficient pressure to give necessary strength without excessive d.; sepn. was by means of a porcelain ring 1 mm. high and 2.5 mm. wide. The amt. of oxide converted to sulfate, in mg./sq. cm. hr., was detd. at temps. from 525 to 850°. At 700° the extent of the reaction was 47.4, 11.5, 3.17, 12.23, 6.76, and 0.82 for $CuSO_4 + CaO$, $ZnSO_4 + CaO$, $MnSO_4 + CaO$, $CuSO_4 + MgO$, $ZnSO_4 + MgO$, and $MnSO_4 + MgO$. MoO_3 reacted with oxides of Fe, Pb, Ca, Mg, and Cu.

I. Bencowitz

Pozin, M. E.

Y In memory of Academician Dmitri Petrovich Konovalov.
M. E. Pozin and B. A. Kopylov. *J. Appl. Chem. U.S.S.R.*
S.R. 27, 337-8 (1954) (Engl. translation).—See C.A. 48,
73521. H. L. H.

POZIN, M. Ye.

Subject : USSR/Chemistry AID - P-85
Card : 1/1
Authors : Pozin, M. Ye., and Kopylev, B. A.
Title : In memory of the Academician Dmitriy Petrovich Konovalov
Periodical : Zhur. Prikl. Khim. 27, no. 4, 353-355, 1954
Abstract : Brief outline of the scientific activities of D. P. Konovalov,
founder of the Russian school of physical chemistry on the occasion of
25th anniversary of his death.
Institution : None
Submitted : No date

Pozin, M. E.

MC
The role of the gas phase in the reactions between solids;
M. E. Pozin, A. M. Ginstling, and V. V. Pechkovskii.
Appl. Chem. U.S.S.R. 27, 355-8 (1954) (Engl. translation).
Sec. C.A. 48, 13319i. H. L. H.

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②

RDW
L22

POZIN, M. Fe

USSR.


Role of the gas phase in reactions between solids. M. E. Pozin, A. M. Ginstling, and V. V. Pechkovskii (*J. appl. Chem., USSR*, 1954, 27, 376-381).—Reactions between two solids, whose mechanism could involve partial or complete gasification of one substance and reaction of the gas formed with the other, are decreased in rate by initial compression of the powdered mixture, as would be expected and is illustrated by experimental work on the reaction $\text{CuSO}_4 + \text{PbO}$. Hedvall's claim that many reactions between solids must be purely "solid-phase" because they start at temperatures well below those at which one of the components could dissociate to produce a gas, is invalid, because the dissociation pressure of a given solid can be raised by the presence of another, as is proved experimentally for CoSO_4 and ZnSO_4 in the presence and absence of MgO , and for ZnSO_4 and CuSO_4 in the presence and absence of CaO .

R. C. MURRAY.

NY BI

POZIN, M.E.

Regarding the remarks of N. N. Postnikov, F. N. Tav-
adze, and P. N. Dzhabaridze regarding the paper "Philo-
sophic basis of the 'classical' theory of 'solid phase' proc-
esses." M. E. Pozin and A. M. Ginstling. *J. Appl.*
Chem. U.S.S.R. 27, 983-7(1954) (Engl. translation).—See
C.A. 49, 2142c. B. M. R.

Smw 

Pozin, M.E.
POSTNIKOV, N.N.

On the article of M.E.Pozin and A.M.Ginstling "Philosophical
principles of the "Classical" theory of "solid phase" processes."
Zhur.prikl.khim. 27 no.9:991-992 S '54. (MLRA 7:10)
(Solids) (Pozin, M.E.) (Ginstling, A.M.)

POZIN, M.Ye.; GINSTLING, A.M.

Remarks of N.N.Postnikov, F.N.Tavadze, and P.N.Dzhaparidze concerning the article "Philosophical principles of the "classical" theory of "solid phase" processes. Zhur.prikl.khim. 27 no.9:995-999 S '54. (MLRA 7:10)

(Solids) (Postnikov, N.N.) (Tavadze, F.N.) (Dzhaparidze, P.N.)

Pozin, M. E.

/ Effect of physical properties of a liquid on its fluid foam.
C11 M. E. Pozin and E. S. Turnarkina. *J. Appl. Chem.*
U.S.S.R. 27, 1109-16(1954)(Engl. translation).—See C.A.
49, 7923f. B.M.R.

(1)

Pozin, M.E.

8

Depressing foams with soluble gases. M. E. Pozin and
E. S. Tumarkin. J. Appl. Chem. U.S.S.R. 21, 127-19
(1954) (Engl. translation).—See C.A. 49, 7924b.
B. M. R.

Pozin, M.R.

Some basic reactions of the process of oxidizing metals
by M. R. Pozin, A. M. Ginzburg, and V. V. Pechay.
Dokl. Akad. Nauk SSSR, 1973, 231(4), 1173-1175 (Engl. transl.).
Abstracted in: See C.A.B. 40, 8059a. D. M. B.

M. R. Pozin

USSR

1. Effect of physical properties of a liquid on its fluid foam. M. E. Pozin and R. S. Tinnarkina (Leningrad Technol. Inst., Leningrad). *Zhur. Priklad. Khim.* 27, 1170-9 (1974); cf. *C.A.B.* 48, 6108g.---A foam formed by sucking a gas at a given linear velocity w through a depth of a liquid held on a perforated plate is defined as a dynamically stable foam and is distinguished from a static foam formed by solns. of surface-active substances. The height H of such foams decreases as the surface tension σ and the viscosity η increase. This rule holds in aq. solns. of electrolytes in the range of 70-85 dynes/cm. and 0.09-7 centipoises and in soaps and glycerol in the range of 42-70 dynes/cm. and 1-10 centipoises; aq. solns. of 0.4M $Al(SO_4)_3$ form an exception. The concn. affects H only in so far as it affects σ and η . The effect of w was detd. on monoethanolamine (12.5-25%) and triethanolamine (10, 20, and 30%). The plot H vs. w shows a sharp min. at $w = 0.8$ m./sec., beyond which H is proportional to w up to $w = 3.25$ m./sec. With $w > 3.25$ m./sec. the effect of phys. properties is masked by hydrodynamic forces. Depressing foams with soluble gases. *Ibid.* 1180-3.---Slightly sol. gases, such as CO_2 and SO_2 , 0.5-30 vol. %, do not affect H , the structure, nor the back pressure of a foam formed by H_2O , whereas NH_3 , HCl , and SO_3 depress H and this depression is not affected by a change in σ or η .

I. Bencowitz

POZIN, M.Ye.; TUMARKINA, Ye.S.

Suppression of foam by easily soluble gases. Zhur.prikl.khim.
27 no.11:1180-1183 N '54. (MLRA 7:12)

1. Leningradskiy tekhnologicheskii institut im. Lensoveta.
(Foam)

POZIN, M.Ye

DISCUSSION

Some basic reactions of the process of oxidizing sulfides are discussed. M. E. Pozin, A. M. Ginstling, and V. V. Pechkovskii. *Russ. Metall.* 27, 1237-43 (1954); cf. *C.A.* 48, 13319i. As an approach to the study of the mechanism of roasting sulfide ores the reaction between sulfates and sulfides was investigated. Dry powders with a total S of 0.25 g. and $SO_2/S = 3$ were heated in a current of N_2 , 3 l./hr., and the rate of the reaction k was followed by the vol. of SO_2 formed in 15 min.; occasionally the residues were analyzed to obtain a material balance. Plots of k vs. temp. of mixts. of MSO_4 ($M = Al, Zn, \text{ and } Cd$) with CdS are similar to the disocn. pressure curves of the respective sulfates. Plots of MS ($M = Zn, Cd, \text{ and } Pb$) with $Al_2(SO_4)_3$ and with $ZnSO_4$ are more involved. The similarity with the disocn. pressure curves of the sulfates persists, but at low temps., below 550° (C°) for mixts. with $ZnSO_4$, k increases in the order of $Pb > Cd > Zn$, whereas at higher temps. the order is $Zn > Cd > Pb$. The exptl. facts are interpreted on the assumption of the following mechanism: $MSO_4 \rightleftharpoons MO + SO_2$, $S_2 \rightleftharpoons SO_2 + 1/2 O_2$, and $MS + 2 O_2 \rightleftharpoons MSO_4$; the controlling factor is the rate of diffusion of O through the film of sulfate on MS and of oxide on MSO_4 . Cf. Churakov, et al., *C.A.* 43, 7854g. I. Bencowitz

BATUNER, L.M.; POZIN, M.Ye., professor; PROTASOV, A.M., redaktor;
FRIDRIKHSBERG, D.A., redaktor; FOMKINA, T.A., tekhnicheskii redaktor

[Mathematical methods in chemical technology] Matematicheskie
metody v khimicheskoi tekhnike. Izd. 2-oe, dop. Pod obshchei red.
M.E. Pozina. Leningrad, Gos. nauchno-tekhn. izd-vo khim. lit-ry,
1955. 481 p. (MLRA 9:7)
(Mathematics) (Chemistry, Technical)

AID P - 2275

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 1/21

Authors : Pozin, M. Ye. and Ya. Ya. Vosol'sobe

Title : Oxidation of sulfur with nitrose

Periodical: Zhur. prikl. khim., no.3, 229-236, 1955

Abstract : Sulfur was oxidized with nitroses containing up to 10% of nitrosyl sulfate; the concentration of initial H_2SO_4 was 75.5 - 99.8%. The reaction rates are illustrated in diagrams. Three tables, 6 diagrams, 2 references (none Russian).

Institution: Leningrad Technological Institute (im. Lensovet)

Submitted : D 7, 1953

USSR/Chemical Technology - Chemical Products and Their Application, Sulfuric Acid, Sulfur and Its Compounds. I-3

Abs Jour : Ref Zhur - Khimiya, No 3, 1957, 8773

Author : Pozin, M.Ye. and Vosol'sobe, Ya.Ya.

Inst :

Title : Oxidation of Sulfur by a Mixture of Nitric and Sulfuric Acids.

Orig Pub : Zh. prikl. khimii, 1955, 28, No 4, 428-431

Abstract : It has been established that the rate at which S reacts with HNO_3 depends on the concentration of the H_2SO_4 present in the mixture; at H_2SO_4 concentrations of less than 75%, the reaction practically does not take place. When the H_2SO_4 concentration is increased, the rate of oxidation increases sharply and attains a maximum when 92% sulfuric acid is used. There are reasons to believe that in both the acid mixture and in conc. HNO_3 the active agent is not the nitrate anion, but the singly charged notronium (NO_2^+) or nitracidium (NO_3H_2^+) ion.

Card 1/1

POLYN, M.E.

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Reaction of sulfides with metal oxides. Yt. R. Pechkovskii (1)
A. M. Ginstling, and V. V. Pechkovskii. Zh. fiz. khim.
41, 113-8 (1967); cf. S. A. 46, 8050h. — Mixts. of CuO
 and Fe₂O₃ with sulfides of Fe, Zn, and Cd (total S = 0.3 g.)
 were heated in a current of N₂ for 1 hr. Above 650° the
 rate of SO₂ formation k is greater with ZnS than with CdS,
 and the ratio of S²⁻ to SO₂ is greater with CuO than with
 Fe₂O₃; k is larger with Fe₂O₃. k vs. CuO/FeS is a linear
 function; at 650° k is practically const. and as the temp.

rises dk/dt increases so that at 700°, at CuO/FeS = 10, k =
 70%. k vs. CuO/CdS is not linear and k decreases with
 the ratio, and the rate of decrease is greater as the temp.
 increases. k vs. CuO/ZnS passes through a max. at CuO/
 ZnS = 5, the value of k increases with the temp., and the a
 curve at the max. becomes sharper; at 700° the max. k =
 60%. The exptl. facts are ascribed to the difference in the dif-
 fusocn. pressures of the sulfates and the oxides of the dif-
 ferent metals. I. Benicowitz

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AID P - 3487

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 2/21

Authors : Pozin, M. Ye., I. P. Mukhlenov, and L. S. Vasilesku

Title : Reduction of ferric sulfate with sulfur dioxide

Periodical : Zhur. prikl. khim., 28, 6, 573-578, 1955

Abstract : Experiments were carried out with gases containing various amounts of sulfur dioxide and oxygen in the presence of an iron catalyst at 20-80°C, and the effects of temperature, SO₂-content, and O₂-content on the rate of reduction of ferric sulfate to ferrous sulfate were studied. The experimental data show that sulfur dioxide contained in the waste gases from metallurgical processes and in flue gases can be oxidized to sulfuric acid. Seven diagrams, 7 references, 4 Russian (1936-1952).

Institution : Leningrad Technological Institute im. Lensovet

Submitted : My 10, 1954

AID P - 3565

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 2/20

Authors : Pozin, M. Ye., I. P. Mukhlenov, and L. S. Vasilesku

Title : Oxidation of sulfur dioxide in a ferrous sulfate solution

Periodical : Zhur. prikl. khim., 28, 7, 681-686, 1955

Abstract : Sulfur dioxide reacts with a ferrous sulfate solution forming ferric sulfate and sulfuric acid. Optimum temperature for the oxidation of ferrous sulfate to ferric sulfate is 60-80°C, and for the formation of sulfuric acid, 80-90°C. Six diagrams, 7 references, 5 Russian (1931-1955).

Institution : Leningrad Technological Institute im. Lensovet

Submitted : My 10, 1954

Pozin, M. E

The effect of the properties of dust on its removal from gas by foam. M. E. Pozin, I. P. Mukhtenov, and V. Ya. Demshin (Leningrad Technol. Inst., Leningrad). *Zhur Priklad. Khim.* 28, 841-8 (1955); *Ch. C.A.* 49, 7923. — The removal of hydrophilic (SiO_2 , CaCO_3 , Al_2O_3 , CuO , Cu_2O , and BaSO_4) and hydrophobic (wood charcoal, coal, S, malachite, ZnS , FeS_2 , and PbS) dusts from air by H_2O foam held on a perforated plate was detd. as a function of the d , γ , the wettability, and the mean diam. δ of the particle and the diam. d_p of the plate perforation. The degree of fractional dust removal σ_f was correlated with the Stokes criterion (Stk); $Stk = \gamma \delta^2 \omega / g \eta$ and $\sigma_f = 100 - (b/a)(160 - \sigma)$, where b and a are the wt. % of the dust of a given δ entering and leaving the scrubber, σ is the over-all degree of dust removal, g the acceleration of gravity, ω the gas velocity (cm./sec.), and η is the dynamic viscosity coeff. of air (g. sec./sq. cm.). δ varied from below 2.5 to 60 μ . For particles of $\delta < 6 \mu$ the hydrophilic dusts follow the linear function $\sigma_f = 111 Stk^{0.07}$. The same function expresses the results of hydrophobic dusts with a $Stk > 10^{-4}$; those with $10^{-4} < Stk < 10^{-1}$ fall on the line $\sigma_f = 435 Stk^{0.14}$. The most effective factor is δ . In the same scrubber with the same foam height σ decreases from 59.5 to 70% as δ decreases from 30 to 5-2.5 μ . Wettability is not a detg. factor with dusts with a high Stk ; dusts with $\delta > 20 \mu$ have the same σ .
I. Benecovitz

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JAN

(2)

AID P - 3929

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 12/19

Authors : Pozin, M. Ye., I. P. Mukhlenov, and V. Ya. Demshin

Title : Analysis of the dust-collecting process in a foam apparatus.

Periodical : Zhur. prikl. khim. 28, 10, 1116-20, 1955

Abstract : Dust removal with the aid of foam apparatus proceeds in two steps. A description of experiments which were carried out to elucidate this process and an analytical discussion of the process are given. One table, two diagrams, 4 references, all Russian (1953-55).

Institution : Leningrad Technological Institute im. Lensovet.

Submitted : F 21, 1955

Pozin M.E.

The efficiency of multiple-plate foam scrubbers. M. E. Pozin, I. P. Mukhlenov, and V. Ya. Demushin (Leningrad Technol. Inst., Leningrad). *Zhur. Priklad. Khim.*, 28, 1231-4 (1955); cf. *C.A.* 50, 4427g. The effectiveness of additional plates on the degree of dust removal was detd. in a glass column with a dust (SiO_2) load of 0.98 g./cu. m. The degree of scrubbing by 4 consecutive plates was 98.3, 36.5, 23.2, and 13.1%. The fractional dust removal σ_i of fractions with particle diam. 0-2.5, 2.5-5, 5-7.5, 10-15, 15-20, and 20-30 were: by the first plate 74.0, 84.5, 91.5, 97.1, 98.1, and 99.5%; by the second plate 9.2, 39.0, 45.4, 60.5, 78.5, and 83.0%; the corresponding values of σ_i were smaller for the 3rd and 4th plates. This is ascribed to the different phys. properties (such as gas adsorption) of particles in the same size fraction and to a different turbulent coagulation of each particle as the dust concn. decreases. I. B.

Pozin, M. E.

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Chem
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Oxidation of sulphides and sulphide ores. M. E. Pozin, A. M. Goshling and V. V. Pechkovskii (Zh. prikl. Khim., 1955, 28, 1249-1254).-- The temp. at which intensive evolution of SO₂ begins when air is passed over FeS, ZnS and CuS rises in this order, and is very close to that for sulphate-sulphide mixtures in a stream of N₂. This suggests that after initial oxidation of surface sulphide the velocity of the reaction between sulphide and sulphate determines the rate of SO₂ evolution, and is itself controlled by the velocity of diffusion of O₂ and SO₂ through the surface layer. At a given temp., production of SO₂ from mixtures of sulphides exceeds that found with each sulphide taken separately. This effect is related to differences in the relative rates of oxidation of the sulphides and of decomp. of the resulting sulphates, as a result of which the sulphide of one metal is able to react with the sulphate of another. R. TRUSCOE.

POZIN, Maks Yefimovich; KLEBANOV, G.S., redaktor; ERLIKH, Ye.Ya.,
tekhnicheskiiy redaktor

[Technology of mineral fertilizers and salts] Tekhnologiya
mineral'nykh udobrenii i solei. Leningrad, Gos. nauchno-tekhn.
izd-vo khim. lit-ry, 1956. 352 p. (MLRA 10:3)
(Fertilizers and manures) (Salts)

POZIN, M. Ye

2051. Science and technique in Soviet Union—gas-liquid
 reaction in foam. M. S. Pozin. *Nefte (Kiev)*, 1955, 12,
 133-8. So far gas-liquid reactions have been carried out by
 means of exchange through films, droplets or bubbles. The
 first 2 methods are not very fast. The third, more intense,
 reaction requires more energy. By providing more tur-
 bulence, and so more frothing and emulsification, the system
 becomes unstable and the interphase contact area is increased.
 The speed required for such state is between that for bubble
 towers and atomization: mixed with foam some droplets
 appear, but there are no streams of liq. In actual fact it is
 impossible to get either of the 3 states without the appearance
 of the others. "Mesh" plates are most effective in obtaining
 foams, but the system at "bubble" stage may, with increase
 of gas velocity, go over straight to spray state. Foam should
 form at 1.0-1.3 m/sec, gas velocity should in any case be
 more than natural buoyancy of the bubbles, best results being
 obtained when ratio of buoyancy of foam and gas is greater
 than 1 and often nearly 0.9. At gas velocity of 3-4.5 m/sec
 spray begins to form. In bubble towers material and heat
 exchange take place within the thin layer on and above the
 plate, whilst in foam towers it takes place all through the
 foam. Distances between plates should be large, occasionally
 one plate will suffice; No. of plates $n = \log (1 - \text{efficiency of}$
 $\text{the apparatus}) / \log (1 - \text{efficiency of one plate})$. L/G can
 vary within large limits. A graph of the height of the foam
 in relation to the gas velocity at various initial heads of liq is
 given. In conclusion, it is claimed that the foam-filled tower
 will work more efficiently than a packed tower. M. S.

POZIN, M.Ye., doktor tekhnicheskikh nauk; MUKHLENOV, I.P., kandidat
tekhnicheskikh nauk; TARAT, E.Ya., kandidat tekhnicheskikh nauk

Removal of dust from industrial gases by a foam gas-purifier. Gig.
1 san. 21 no.12:11-18 D '56. (MLRA 10:1)

1. Iz Leningradskogo tekhnologicheskogo instituta imeni Lensovetu.
(DUST, prev. and control.
removal from indust. gases by gas-purifier)

Pozin M Ye

USSR/Chemical Technology. Chemical Products and Their Application.
Sulfuric Acid, Sulphur and Its Compounds.

J-3

Abs Jour: Referat Zh.-Kh., No 8, 1957, 27415

Author : M. Ye. Pozin, G.V. Bel'chenko

Inst :

Title : On the Question of Reduction of Nitric Acid Consumption in the
Nitrose Sulfuric Acid Process.

Orig Pub: Zh. prikl. khimii, 1956, 29, No 4, 506-511

Abstract: About 97% of the HNO_3 consumption by H_2SO_4 works is determined by the losses of N oxides (OA) in waste gases. The main cause of OA losses is that they are not prepared for the interception in the absorption zone of the tower installation (excess of NO as compared with the easily absorbed equimolecular mixture of $\text{NO} + \text{NO}_2$). Laboratory experiments were carried out in order to determine the dependence of the optimum initial oxidation degree $x_{\text{opt}} = c_{\text{NO}_2} / (c_{\text{NO}} + c_{\text{NO}_2})$ of nitrose gases supplied

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USSR/Chemical Technology. Chemical Products and Their Application.
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Abs Jour: Referat Zh.-Kh., No 8, 1957, 27415

to the absorption towers on various factors. NO, as well as O₂ for the oxidation of a part of NO into NO₂ were fed into the oxidation space at the temperature of $20 \pm 0.5^{\circ}$; the amount of O₂ answered the preset oxidation degree, because the mixture of NO + NO₂ leaving the oxidation space did not contain O₂. This mixture was let through an absorption glass tube of 38.5 mm dia. with a porcelain head piece 400 mm high wetted with 76%-ual chemically pure H₂SO₄. N₂ and O₂ also were fed into the column in order to dilute the nitrose gases to the necessary concentration. The contents of OA in gases leaving the column were determined with a photocolormeter. The experiment results showed that the losses of OA and the consumption of HNO₃ in the lead chamber process depended on the initial oxidation degree x_0 . The losses can be reduced by feeding gas of $x_0 < 0.5$ into the absorption zone. The dependence of OA

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USSR/Chemical Technology. Chemical Products and Their Application.
Sulfuric Acid, Sulphur and Its Compounds.

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Abs Jour: Referat Zh.-Kh., No 8, 1957, 27415

content in waste gases on x_c was expressed by curves with a sharp minimum at x_c between 0.4 and 0.45 (depending on the initial composition of gases). The computations showed that the divergence of x_c of 0.01 to either side increased the consumption of HNO_3 by 2 kg per 1 ton of H_2SO_4 .

Card : 3/3

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Pozin, M. E.

Chem / Decreasing nitric acid losses in the nitrososulfuric acid process. M. E. Pozin and G. V. Bel'chenko. J. Appl. Chem. U.S.S.R. 29, 855-60 (1956) (Engl. translation). See C.A. 50, 16035d. U. M. R. 2

km

Pozin, M. Ye.

USSR/Chemical Technology. Chemical Products and Their Application.
Sulfuric Acid, Sulphur and Its Compounds.

Abs Jour: Referat Zh.-Kh., No 8, 1957, 27414

Author : M. Ye. Pozin. G.V. Bel'chenko

Inst : _____

Title : Losses of Nitrogen Oxides in Waste Gas of Nitrosulfuric Acid
Systems.

Orig Pub: Zh. prikl. khimii, 1956, 29, No 7, 972-977

Abstract: The results of experiments with the installation (see next abstract) for the determination of the values of optimum initial oxidation degree x_0^{opt} of nitrosulfuric gases of various composition (3 to 9% of the mixture of $NO + NO_2$ and 5 to 10% of O_2) in case of head pipes of various hydraulic radii r are shown. It is established that the preparation of nitrosulfuric gases for absorption must be done taking into consideration the composition of gases and r . The greater the nitrosity of gases to be absorbed, the greater the value of

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USSR/Chemical Technology. Chemical Products and Their Application.
Sulfuric Acid, Sulphur and Its Compounds.

J-3

Abs Jour : Referat Zh.-Kh., No 8, 1957, 27414

tion degree x_0 must be in order to reduce the losses of oxides (OA). The dependence of x_0^{opt} on ξ is a more complicated function depending also on the content of O_2 in gases. Thus, in case of 10% of O_2 , x_0^{opt} decreases with the increase of ξ at any gas nitrosity. Should the content of O_2 in gases decrease, this rule would be altered: in case of little nitrose gases and a small ξ , the magnitude of x_0^{opt} remains nearly without change. The minimum losses of OA in waste gases are secured at $x_0 < 0.5$ under the condition of a complete conversion of SO_2 in the producing zone and of the normal hydrodynamic regime in the absorption zone (i.e., that the complete head piece is wetted and the gases are distributed uniformly in it). $x_0 = 0.39$ to 0.46 under the conditions that have been studied. The experimental values of x_0^{opt} of nitrose gases before the absorption in case of various gas compositions and various ξ can be

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. USSR/Chemical Technology. Chemical Products and Their Application.
Sulfuric Acid, Sulphur and Its Compounds.

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Abs Jour: Referat Zh.-Kh., No 8, 1957, 27414

used for the preparation of OA for the absorption with a view to
reduce their losses and the consumption of HNO_3 in H_2SO_4 manu-
facturing.

Card : 3/3

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POZIN, M.Ye.

Efficiency coefficient of chemical apparatus as a function of the rate of flow of materials and of the coefficient of the rate of chemical, diffusive, and thermal processes. Zhur.prikl. khim. 29 no.9:1336-1346 S '56. (MLRA 9:11)

1. Leningradskiy tekhnologicheskii institut imeni Lensoveta.
(Chemical engineering--Apparatus and supplies)

Pozin, M.E.

USSR / General Problems - Methodology. History. Scientific Institutions & Conferences. Teaching. Problems of Bibliography and Scientific Documentation. A-1

Obs Jour : Revrat Zhur - Khimiya, No 6, 25 March 1957, 1'05h

Author : Dubovitskiy, A.M., Pozin, M.E.

Inst :

Title : Semen Isaakovich Vol'fkovich

Orig Pub : Zh. Prikl. Khimii, 1956, 29, No 11, 1617-1620

Abstract : On the 60th anniversary of birthday of the academician S.I. Vol'fkovich (born 1896), a well-known specialist and investigator in the domain of chemistry and technology of inorganic substances (Loskovskiy Inst, Vachnyy Inst for fertilizers and insectofungicides).

Card 1/1

POZIN, M.Ye., professor; KOPYLEV, B.A.; TUMARKINA, Ye.S.; BEL'CHENKO, G.V.;
SIMONOV, G.A., redaktor; ERLIKH, Ye.Ya., tekhnicheskii redaktor

[Practical manual on the technology of inorganic substances]
Rukovodstvo k prakticheskim zaniatiyam po tekhnologii neorganiches-
kikh veshchestv. Pod obshchei red. M.Ye. Pozina. Leningrad, Gos.
nauchno-tekhn. izd-vo khim. lit-ry, 1957. 291 p. (MLRA 10:7)
(Chemistry, Inorganic)

POZIN, M. *42*

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Plot ✓ Character of gas-liquid dispersed systems. ² M. R. Pozin, I. P. Mukhlenyay, and B. Ya. Farat (Leningrad Technol. Inst., Leningrad). *Zhur. Priklad. Khim.* 30, 43-52 (1957).
— The conditions in a sieve-plate app. are detd. primarily by the flow rate of the gas stream, and the bubbling process passes into a foaming process. Photographic examn. shows that the structure of the foam changes. The processes of heat- and mass-transfer proceed more vigorously in the layer of dynamically stabilized foam consisting of films and liquid mixed with gas bubbles. The criteria suggested by Melikyan (preceding abstr.) are untenable for sieve plates, and the concept of 3 streams is not always accurate.

I. B.

*R.
MT*

POZIN, M.Ye.; MUKHLENOV, I.P.; TABAT, E.Ya.

Foam technique for dust collection from gases. Zhur.prikl.khim.
30 no.2:293-297 F '57. (MLRA 10:5)

1.Leningradskiy tekhnologicheskij institut imeni Lensoveta.
(Dust collectors) (Gases)

POZIN M. YE.
USSR /Chemical Technology. Chemical Products
and Their Application
Processes and Apparatus for Chemical Technology

H-2

Abs Jour: Referat Zhur - Khimiya, No 1, 1958, 1536

Author : Pozin M. Ye., Kopylev B.A.

Title : Effectiveness of the Absorption of Gases of
Different Solubility by the Bubbling and
Foaming Methods

Orig Pub: Zh. prikl. khimii, 1957, 30, No 3, 362-369

Abstract: For a cross current there has been derived the
approximate equation: $\eta = 2K / (2w + K)$, where
 η -- efficiency, K -- total coefficient of
absorption, referred to 1 m² of cross section
area of gaseous flow (plate), at a moving force

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USSR /Chemical Technology. Chemical Products
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Abs Jour: Referat Zhur - Khimiya, No 1, 1958, 1536

expressed in units of concentration of the gaseous phase, kg/m^2 hour (kg/m^3); w -- linear velocity of inert component, in m/hour, numerically equal to its rate of flow per 1 m^2 of plate surface area (Pozin M. Ye., Zh. prikl. khimii, 1952, 25, No 10, 1032). To utilize the equation it is necessary to have available an experimentally determined correlation between K and w , or η and w . Analysis of extensive experimental data of various investigators shows that the values of η , on absorption in bubbler and foaming apparatus, are determined essentially by the solubility of

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USSR /Chemical Technology. Chemical Products
and Their Application
Processes and Apparatus for Chemical Technology

H-2

Abs Jour: Referat Zhur - Khimiya, No 1, 1958, 1536

the gas in the liquid; the influence of the other parameters (linear velocities of gas and liquid, depth of layer through which the bubbling takes place, or that of the layer of foam) on η is not as sharply manifested. It was found that $\eta = 1.0 \div 0.5$ in the case of gases that are readily dissolved, $\eta = 0.5 \div 0.05$ in the case of gases of moderate solubility, and $\eta = 0.05 \div 0.001$ with difficultly soluble gases. By using these values it is possible to determine, by means of the above-stated equation, the order of magnitude of K, for different gases, during the absorption by the bubbling or by the foaming method.

Card 3/3

POZIN, M. *78*

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Carbonation of sodium carbonate solutions in a lean condition. *M. S. Pozin, B. A. Kopylov, and E. V. Tarat. Zhur. Priklad. Khim.* 30, 674-82 (1957); cf. *C.A.*

51, 12561c. — Carbonation of Na_2CO_3 solns. with CO_2 on a single perforated plate was investigated (a) with a continuous flow of liquor and (b) with a given vol. of liquor periodically renewed. In a the time of contact t was brief (0.05–0.1 sec.) and the liquor residence was only 7.5 sec. at a liquor rate L of 2 cu. m./m. hr. (20 l./hr.). Conversion was 0.05 and a tower with 50–60 plates would be required for a conversion of 0.25. With a soln. contg. Na_2CO_3 145–60 and NaHCO_3 3.0–3.4 g./l. η , (the efficiency of conversion per plate in respect to the liquid) increased from 0.31 to 0.93% as L increased from 6 to 20 l./hr. with a 27–8% CO_2 gas; with a 10–11% CO_2 gas at a gas rate $w = 2.5$ m./sec. η increased from 0.41 to 1.75%. With a soln. contg. Na_2CO_3 63 and NaHCO_3 6 g./l. and $L = 100$ l./hr. η decreased from 0.04 to 0.015 as w increased from 0.75 to 3.5 m./sec. (25–9% CO_2). With confined solns. (125 ml.) contg. Na_2CO_3 160 and NaHCO_3 7 g./l. and $w = 1.5$ –2.5 m./sec. (25–30% CO_2) the degree of carbonation α vs. t curve consisted of 2 linear branches intersecting at the point of satn. with respect to NaHCO_3 . The coeff. of absorption increased with the vol. of soln., or liquor height, on the plate and with w . It decreased sharply as α increased up to the satn. point and then increased, with the simultaneous pptn. of NaHCO_3 , from 32 to 60 kg./sq. m. hr. at satn. as α increased to about 97%.
I. Benisevitz

MT *abx*

POZIN, M.Ye.; MURATOVA, M.I.

Crystallizing potassium chloride from kainite lyes. Zhur. prikl.
khim. 30 no.9:1378-1382 S '57. (MIRA 11:1)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета.
(Potassium chloride)

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Quality of potassium chloride obtained from khalite
liquors of different compositions. M. E. Pozin and M. I.
Bogacheva (Leningrad Technol. Inst., Leningrad). Zhur.
Prikl. Khim. 30, 1983-6 (1957); cf. preceding abstr. —
The compn. of the solid phase, (KCl + NaCl), crystd.
from synthetic aqns. approaching the compn. of khalite
liquors during 30-min. cooling in vacuo from 70-5° to
34-6° was detd. The compn. was varied so that β = syl-
vine/khalite (wt.) in the aq. was 0.37, 0.8, and 0.63.
The K₂O content in the solid phase increased with β . As a
function of the H₂O content in the liquor, w = total equiv.
H₂O/total equiv. (K₂ + Mg), the content of K₂O in the
solid phase increased with w , passed through a max. at
 w = 14-15 and decreased sharply (NaCl increased) at
 w > 18.5. In liquors with w = 14.5-15.5 the K₂O content
reached a const. value of 43-50% with K₂O/SO₄ = 0.95 in
the liquor. I. Bogacheva.

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(4E9)
(4E32)

11

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[Guide to technical reference books] Putevoditel' po tekhnicheskim spravochnikam. Pod obshchei red. M.A.Anserova. Leningrad, Gos. publichnaya biblioteka im. M.E.Saltykova-Shchedrina, 1958. 334 p.
(MIRA 12:8)

(Bibliography--Technology)

AUTHORS: Pozin, M. Ye., Koplov, E. A. 507/156-58-3-44/52

TITLE: The Velocity of the Interaction of Nepheline With Aqueous Solutions of Sulfur Dioxide (Skorost' vzaimodeystviya nefelina s vodnym rastvorom dvuokisi sery)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 3, pp. 588-591 (USSR)

ABSTRACT: When sulfur dioxide reacts with an aqueous suspension of nepheline an absorption of SO_2 in the solid phase occurs. The quantity of SO_2 absorbed is dependent on the SO_2 concentration in the solution. In concentrated solutions of SO_2 (1,9 - 4,9 SO_2) a strange chemical reaction between nepheline and SO_2 occurs. In solutions with a relatively high content of SO_2 a longer period of absorption is required before SO_2 is found in the suspension. The presence of SO_2 is explained by the decomposition of acid aluminum sulfite. $(2 Al(HSO_3)_3 \rightleftharpoons Al_2(OH)_4SO_3 + 5 SO_2 + H_2O)$.

Card 1/2 The absorption of SO_2 from the solution by the solid phase of nepheline is made use of in the absorption process of